DOCUMENT RESUME

ED 279 840 CE 046 510

AUTHOR	Steward, Jim; Jobes, Raleigh
TITLE	Farm & Ranch Business Management. Second Edition.
INSTITUTION	John Deere Co., Moline, Ill.
REPORT NO	ISBN-0-86691-088-3
PUB DATE	87
NOTE	285p.
AVAILABLE FROM	John Deere Distribution Service Center, 1400 Third Avenue, Moline, IL 61265 ($16.45; 10 or more, $13.15).
PUB TYPE	Guides - Classroom Use - Materials (For Learner) (051)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Adult Education; *Adult Farmer Education; *Agribusiness; Agricultural Education; Budgets; *Business Administration; Case Studies; Computers; *Decision Making; Farm Accounts; *Farmers; *Farm Management; Guides; Investment; Laws; Marketing; Money Management; Organization; Recordkeeping; Taxes
IDENTIFIERS	*Ranching

ABSTRACT

This practical guide for the agribusiness manager (the farmer, rancher, and other agribusiness people who work with agricultural commodities, supplies, and services) gives a basic understanding of modern management practices. It provides guidelines that can help them make practical business decisions. Chapter 1 is an introduction that highlights farm management efficiency, decision making, and goals and objectives. The following 11 chapters discuss recordkeeping (importance and purposes of keeping records, types of systems, record book components), financial analysis (cash flow, net worth, income statements and their ratios; whole farm and enterprise analysis; relationships of various analyses), budget analysis (introduction to types and uses of budgets, how to use and analyze a partial budget, enterprise budget and whole farm budget, production principles, cost components), cash flow analysis (projections and analysis, repayment capacity, credit needs, credit types and sources), marketing (principles of supply and demand, marketing functions, strategies), investment analysis (time value of money, methods of investment analysis, investment financing, risk management, assets), taxes (particularly income tax management), business organizations (advantages and disadvantages of sole proprietorships, partnerships, corporations, cooperatives as organizations for doing business), agricultural law (legal rights of farmers and ranchers and pertinent laws), computers (use in farm and ranch decision making), and whole farm case study (analysis of a farm situation). Appendixes include a glossary, bibliography, and index. (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

BEST COPY AVAILABLE

ED279840

FARM & RANCH

150

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

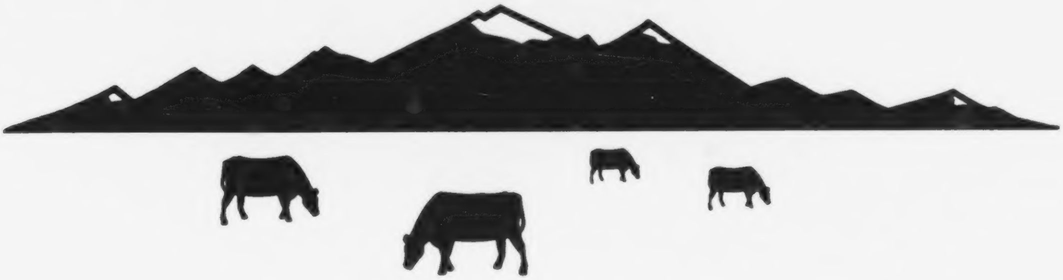
- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

LRHathaway

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

FARM & RANCH BUSINESS MANAGEMENT



JOHN DEERE

PUBLISHER

Authors are selected to provide a basic technical manuscript which is edited and rewritten by Deere & Company staff editors. This book is published by:

Deere & Company
Service Training Department
John Deere Road
Moline, Illinois 61265

Director of Service: *Robert A. Sohl*
Managing Editor: *Louis R. Hathaway*
Editor: *Larry A. Riney*
Publishing Clerk: *Annette M. LaCour*

We have a long-range interest in Agribusiness Education

Copyright © 1985, 1987/Deere & Company, Moline, Illinois/All Rights Reserved.
Second Edition, First Printing ISBN 0-86691-088-3 Litho in U.S.A.

ACKNOWLEDGEMENTS

Deere & Company would like to thank the following people and institutions for giving their effort and resources to the making of this book.

AUTHORS

Jim Steward, Farm Business Management Curriculum Specialist, State Department of Vo-Tech Curriculum and Instructional Materials Center, Stillwater, Oklahoma.

Dr. Raleigh Jobes, Agricultural Extension Economist and Professor in Agricultural Economics, Oklahoma State University, Stillwater, Oklahoma.

Both authors acted as consulting editors and evaluators of the material presented.

CONTRIBUTORS

Deere & Company would like to thank the following people for their help in specialized areas.

Keith R. Carlson, Agri-Education Inc., Stratford, Iowa. Mr. Carlson contributed to the Computer Applications chapter.

Donald D. Osburn, Professor, Department of Agricultural Economics, University of Missouri, Columbia, Missouri. Mr. Osburn contributed to the budget and investment sections of this book.

SPECIAL ACKNOWLEDGEMENTS

Deere & Company would like to recognize the National FFA Farm Business Management Contest Committee who originally proposed the idea and concept of this book.
We are especially indebted to those committee members who read and evaluated this textbook before it was printed.

SOURCES

Two sources graciously allowed Deere & Company to use their blank forms and budget information. They are:

The Oklahoma State Department of Vocational and Technical Education, Stillwater, Oklahoma, whose material includes Chapter 2 — blank forms 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 6.1 and the Hired Labor Record: Chapter 13 — blank forms 6.1, 6.2, 6.3, 6.4 and 6.5. These forms are from the *Oklahoma Young Farmer Record Book*. (All information was input by the writers or editors of this book.)

Oklahoma State University, whose material includes enterprise budgets in Chapter 4 for peanuts, watermelons, and cantaloupes; the enterprise budget for corn in Chapter 5; the cash flow projection forms in Chapter 6 and 13; the enterprise budgets for wheat and stocker steers in Chapter 13. (All information and data input on the forms and the revisions to the enterprise budgets were made by the writers or editors of this book).

PREFACE

An important key to the survival of the farm and ranch is good business management. The new breed of farmer and rancher that is emerging must know how to apply management principles to their operation in order to make the most profit. They must be able to compete and win in a highly volatile worldwide commodity marketplace. This requires extensive knowledge of all aspects of the business.

Until now a serious gap existed in the quest for this knowledge. Educators have been aware that a book on the basics of farm and ranch business management was sorely needed for the serious agricultural student and young farmer.

Recently the National Future Farmers of America (FFA) Farm Business Management Contest Committee approached Deere & Company with this problem. There was not a basic book that the farmers or ranchers could use to build a solid management foundation upon.

In response Deere & Company has developed *Farm & Ranch Business Management*. This is a basic book that is the first word on the subject. It was written by the experts as a practical guide for the agribusiness manager. It explains in plain English the principles and techniques that every farmer and rancher must know.

Farming and ranching are like jig saw puzzles. There are many pieces that must be used in order to create the complete picture. For the first time, this book has brought together a basic overview of the complete farm and ranch management picture. The reader can see how important it is to get every phase of the farm or ranch business working together.

The Editors

TABLE OF CONTENTS

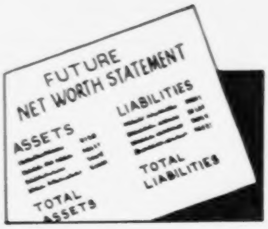
CHAPTER 1
INTRODUCTION

What Is Agribusiness Management? 1-1
The Purpose Of This Book 1-1
Farm Management Efficiency 1-2
Decision-Making 1-2
Goals And Objectives 1-4
The Contents Of This Book 1-8

CHAPTER 2
RECORD KEEPING

Introduction. 2-1
The Record System 2-2
Accounting System 2-6
Reporting Income And Expenses 2-7
The Procedures. 2-9
Record Keeping Procedure Steps 2-9
Beginning-Of-The-Year Inventory. 2-9
Posting Records 2-16
Cash Flow Summary 2-32
Other Records 2-32

CHAPTER 3
FINANCIAL ANALYSIS

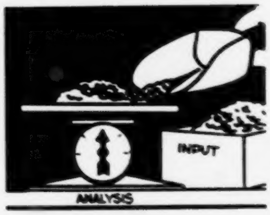


Introduction. 3-1
Assessing The Financial Condition Of The Business 3-1
Net Worth Statement. 3-2
Kinds Of Financial Analysis. 3-5
What To Look For In Net Worth Statements 3-7
Income Statement 3-9
Net Farm Income 3-12
Long Term Assets And Net Worth Statements 3-17

CHAPTER 4
BUDGET ANALYSIS

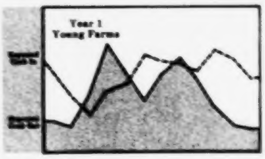
Planning A Budget 4-1
What Is Budgeting? 4-2
Why Budget? 4-2
Budgeting Resources 4-2
Types Of Budgets 4-2
Budgeting Principles 4-2
Where Do You Get Budget Information 4-3
Limitations Of Budgeting. 4-4
Guidelines For Farm Or Ranch Budgeting 4-4
Understand The Budgeting Process 4-4
Steps In Developing A Budget. 4-5
Enterprise Budgets 4-5
Types Of Costs 4-9
Allocation Of Costs 4-9
How Do You Use An Enterprise Budget? 4-9
The Analysis 4-12
Whole Farm Budgeting. 4-15
Partial Budgeting 4-16
Aids To Budgeting. 4-20

CHAPTER 5
COST ANALYSIS



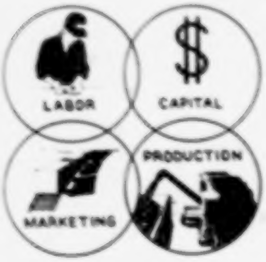
Input And Output 5-1
Production Function. 5-1
The Opportunity Cost 5-6
Equi-Marginal Principle 5-8
Input-Input Relationships 5-9
The Least Cost Ration Formula. 5-10

CHAPTER 6
CASH FLOW ANALYSIS



The Cash Flow Projection 6-1
Why Make A Cash Flow Projection? 6-2
Cash Flow Components 6-4
Comparisons In Cash Flow Summaries 6-8

CHAPTER 7
MARKETING



The Four Types Of Decisions 7-1
What Is The Marketing Concept?. 7-2
How Is Value Established?. 7-2
Market Development 7-3
Functions Of Marketing 7-4
Marketing Efficiency 7-5
What Determines Price? 7-5
Market Structures 7-14
The Market As A Whole 7-18
Marketing Strategies 7-19
Degrees Of Knowledge Of Future Events 7-19
Marketing Strategies For Most Farmers And Ranchers 7-20
Using Market Outlook Information 7-27

CHAPTER 8
INVESTMENT ANALYSIS

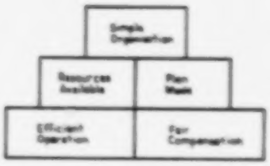
Analyze Before You Invest. 8-1
Compounding Tables 8-4
Discounting Tables. 8-5
Annuities 8-6
A Partial Investment Analysis 8-7
Full Investment Analysis. 8-8
Payback Analysis 8-8
Present Worth Technique 8-10
Taxes. 8-12
Feasibility 8-13
Risk And Uncertainty. 8-15
How To Gain Control Of An Investment 8-18
Tax Shields 8-18
How To Select The Best Method 8-19
The Cash Purchase 8-21

CHAPTER 9
TAXES

Income Taxes. 9-1
Income Tax Management. 9-2
The Tax Worksheet 9-4
Understanding Industry Terms 9-5
Capital Gains. 9-6
Depreciation 9-8
Investment Tax Credit 9-12
Special Tax Situations 9-14
Income Tax Management Strategies To Level Out Income 9-14
Income Tax Differences Among Forms Of Farm Business Organizations. 9-16
Summary Of Income Tax Management 9-16
Social Security Taxes And Benefits 9-17
Social Security Benefits And Medicare 9-20
Estate Taxes 9-20

CHAPTER 10
BUSINESS ORGANIZATIONS

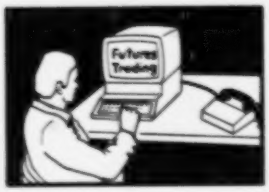
Introduction. 10-1
Business Organization Principles 10-1
Agricultural Business Organizations 10-2
Regular Corporation Versus The Tax Option S Corporation. 10-11
Comparing The Three Primary Farm Business Organizations . . . 10-11
Cooperatives As A Means Of Doing Business. 10-11



CHAPTER 11
AG LAW

Introduction. 11-1
Choosing Counsel 11-1
Sources Of Law. 11-2
Where To Find Laws 11-3
Written Versus Oral Agreement 11-3
What Is A Contract? 11-3
Risk Of Nonpayment 11-5
Warehouse Receipts 11-7
Leases And Leasing 11-8
Insurance For The Farmer Or Rancher 11-11
Legal Liabilities Of Farmers And Ranchers 11-13
Liabilities Of Employees 11-16
Workmen's Compensation Insurance. 11-17
Independent Contractor. 11-18
Legal Aspects Of Fencing 11-19
Animals On Highways 11-20
Handling Strays 11-21
People Injured By Animals 11-21
Animal Diseases 11-22
Brands And Brand Inspection 11-22
Livestock Pollution Laws And Regulations 11-22
Agricultural Chemical Laws And Regulations 11-23
Riparian Rights 11-23
Surface Water 11-24
Drainage. 11-24
Irrigation 11-24
Domestic Use Of Water. 11-25
Estate Planning 11-25
General Kinds Of Property 11-26
Methods Of Owning Real Property. 11-26
Kinds of Deeds Used In Conveying Land Ownership 11-26
Transferring Legal Ownership Of Property. 11-27
Estate Taxes 11-29
Retirements. 11-29

CHAPTER 12
COMPUTER APPLICATIONS



Introduction 12-1
Uses For A Computer 12-2
Input And Output 12-3
The Disadvantages Of Buying A Computer 12-4
The Advantages Of Buying A Computer 12-4
Making The Decision 12-5
Case Studies. 12-5

CHAPTER 13
WHOLE FARM CASE STUDY

Brown Farm 13-1
Ted's Business Proposal. 13-2
Enterprise Budgets 13-11
Visiting A Lender 13-24
Marketing Strategy 13-25
Income Tax 13-26
Partial Budget 13-26

APPENDIX
GLOSSARY 1

BIBLIOGRAPHY 9

INDEX 11

INTRODUCTION

CHAPTER 1

WHAT IS AGRIBUSINESS MANAGEMENT?

Some farmers, ranchers, and other agribusiness people may think that they are managing their business because they operate it on a daily basis. In a sense they are correct. Operation is part of management.

Management, however, is more than merely making decisions. It also is planning and evaluation (Fig. 1). The manager must constantly measure the achievements and losses of the business and make adjustments if necessary.

Fig. 1 — Management Is Planning And Evaluation.

Every business situation is unique, however, all businesses share a similar characteristic. Every business can be divided into several parts or enterprises. For example, a farmer may have a cow-calf operation, raise sheep, and grow corn in the same year. By applying management principles, the farmer can examine the productivity of each enterprise in detail (Fig. 2).

The manager's goal must be to use resources such as land, labor, and capital wisely in order to make the most **profit** from the business. This requires the ability of the manager to make all of the parts of the business work together. By following basic management principles, the manager of an agribusiness can develop the organization and skills required to achieve this goal.

Fig. 2 — Farm And Ranch Business Management Provides Guidelines That Can Be Used To Study The Details Up Close

THE PURPOSE OF THIS BOOK

It is impossible to be competitive in our complex commodity marketplace without the ability to collect accurate data and make correct plans. A bad management decision may mean the difference between success and failure. The farmer or rancher faces problems that were inconceivable in the past. Rapidly increasing production costs, advancing machine technology, and uncertain markets that are based on **worldwide** supply and demand are now a challenge.

There are two objectives set for this book. First, it gives the farmer and rancher a basic understanding of modern management practices. It provides guidelines that can help them make practical business decisions.

Second, it is intended to be used by other agribusiness people who work with agricultural commodities, supplies, and services. They also must be able to apply the principles of management in order to make their business as efficient and productive as possible.

No matter what your job is, or will be, this book is designed to give you the basic knowledge and measurement tools that are necessary to manage your financial future (Fig. 3).

Fig. 3 — Farm Business Management Principles Help Measure Efficiency

FARM & RANCH MANAGEMENT EFFICIENCY

One way to begin the study of management is to explore the concept of efficiency. Efficiency is the result of a comparison of the goals that were expected to happen with what actually happened.

For example, one farm operator may be very efficient while operating a dairy farm. In this situation, income and production may be above average. The expenses may be reasonable in proportion to the returns. However, when this operation tries to expand to two operators, the efficiency may decrease to a point where the operation is no longer profitable. The cause is likely to be the inability of a manager to control a larger operation.

The cause of inefficiency in this example might be the inability of the manager to set realistic goals and make good business decisions for a larger operation.

DECISION-MAKING

Management includes the process of making and carrying out decisions and taking responsibility for these decisions. We are all involved with decision-making. We make many everyday decisions that affect our personal and social life.

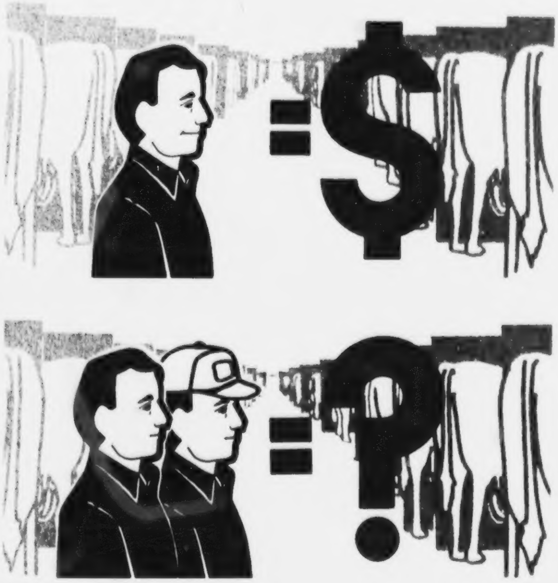


Fig. 4 — A Two-Man Operation May Not Be As Efficient As A One-Man Operation

In order to make decisions we must know if the resources that we need are available. If they are, we must then set realistic goals and decide how we are going to measure our achievements (Fig. 5). This is true for our business life and our personal life.

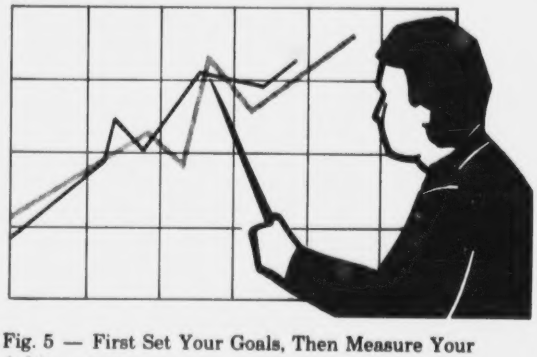


Fig. 5 — First Set Your Goals, Then Measure Your Achievements

STRATEGIES FOR DECISION-MAKING

A good business manager is always looking for ways to improve the decision-making process. Some strategies might include:

- Reducing the number of daily decisions
- Providing for the collection of data to compare alternatives
- Establishing priorities from most to least important

PURPOSES OF SYSTEMATIC DECISION-MAKING

It is important that the farmer or rancher develop a systematic decision-making process. A systematic approach (Fig. 6) to decision-making will allow the manager to:

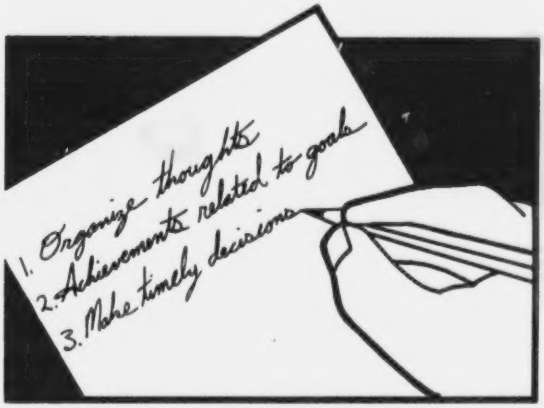


Fig 6 — Decision-Making Requires A Systematic Approach

- Better organize the thought processes
- Achieve outcomes more closely related to the goals
- Be more timely in decision-making

Steps In A Systematic Decision-Making Process

The steps (Fig. 7) that are normally taken in making a decision include:

1. Define the problem.

Example: Own your combine versus custom harvest.

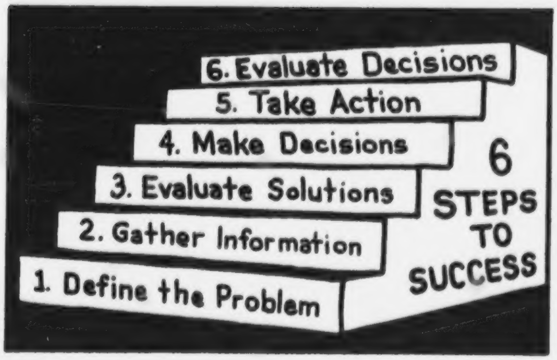


Fig. 7 — Six Steps Are Involved In The Decision-Making Process

2. Gather information about alternative solutions.

Examples: Custom harvest charges, depreciation, taxes, fuel, labor, repairs, interest, timeliness.

3. Evaluate alternative solutions.

Examples: Additional costs, reduced returns, additional returns, reduced costs.

4. Make decisions consistent with goals and objectives.

Example: Your goal might be to maximize after-tax income.

5. Take action and put your decision into effect.

Example: Most decisions are made under conditions of uncertainty or imperfect knowledge. For any particular decision, a number of possible outcomes may exist depending on factors which are beyond the control of the farmer or rancher. The possible results may be predicted by using probability formulas. Risk management techniques for predicting possible outcomes will be discussed in this book.

6. Evaluate and accept the consequences.

Example: Accepting responsibility for the decision taken.

Routine tasks are often done from the force of habit. Where adjustments need to be made that have a great significance, we must go through the steps outlined above. Applying this process to a given situation makes it more meaningful.

APPLYING THE STEPS

The following case can be used to demonstrate an application of the steps that are involved in a systematic decision-making process.

Bob Swenson indicated that he had sold an average of 12,000 pounds of milk per cow annually (Fig. 8). This compared with 14,000 pounds produced by the average dairy farmer on the farms in his area. It should be pointed out that this was one among many critically weak factors in the farm operation. This example is selected to demonstrate the process of decision-making.

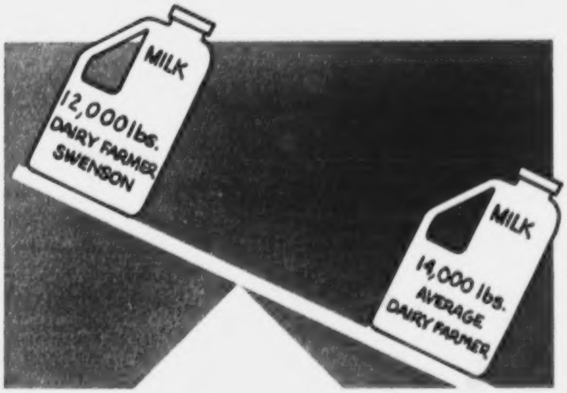


Fig. 8 — Production Measured Against Averages Can Indicate Weak Factors

Assuming that Swenson's goal was to make a profit on his farm, we will apply the problem of low production of dairy cows to the decision-making process. These steps will be followed:

1. A problem is recognized because this farm is relatively unprofitable in comparison to other similar farms.

2. One of the pieces of information we gather suggests that production per cow tends to be associated with profitability for the farm. The Swenson's production is lower than average. This suggests that raising production per cow may increase profitability.

3. What are some of the alternatives for raising production per cow? Breed artificially? Improve feeding? Cull cows? What are the consequences of each of these alternatives? Which is most likely to successfully increase profits?

4. Will Bob Swenson decide to act and choose an alternative or will he fail to act and therefore decide to continue on his present course?

5. Whatever alternative he chooses, Swenson should constantly evaluate the action as information becomes available from his farm records or from his personal observation. Was it a "good" decision? Should he have analyzed the decision more carefully? Are there new alternatives that should be considered?

GOALS AND OBJECTIVES

As we have discussed the decision-making process we have referred to goals. What are goals and objectives?

Goals may be defined as broad statements that show where you want to be after some period of time.

- To make a profit on the farm every year
- To increase cash grain sales by 12 percent per year over five years

Objectives are the steps that must be taken in order to attain goals.

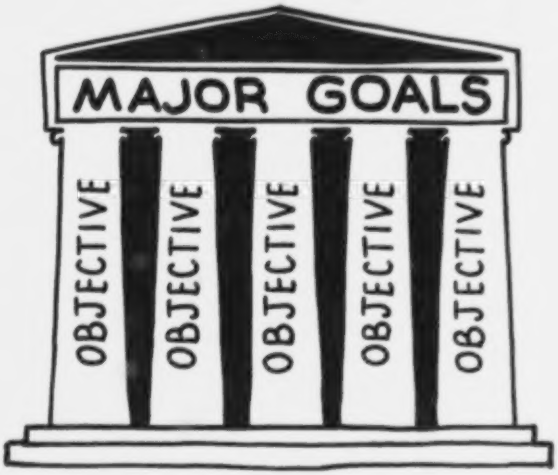


Fig. 9 — Goals Can Be Achieved And Supported Only By Establishing Objectives

Examples of objectives might include:

- To increase wheat sales by 30 percent next year
- To keep accurate and complete farm business and family living records next year

ADVANTAGES OF SETTING GOALS

Advantages of setting goals include:

- Shows where you are going — provides a "road map" (Fig. 10)
- Distinguishes between goals and objectives
- Makes it easier to get where you are going
- Prepares you to meet the future
- You see the big picture and can focus on critical relationships
- Gives purpose and direction to decisions and actions
- Frees you from worries and uncertainties about where you are headed

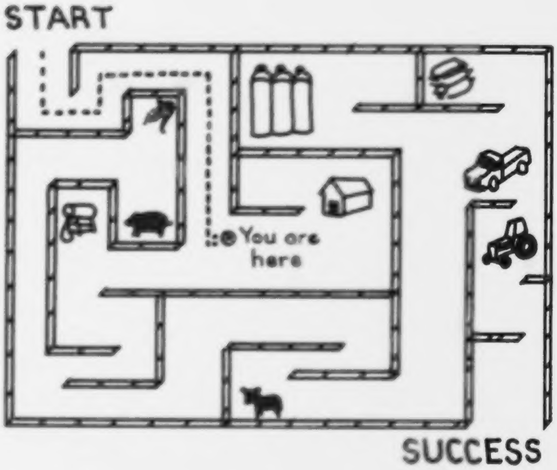


Fig. 10 — Goal Setting Can Help Indicate How Far You Have Progressed

DISADVANTAGES OF SETTING GOALS

In the decision-making process we were told to evaluate alternatives. Just as there are advantages of setting goals there are disadvantages. These disadvantages include:

- Takes time to decide on goals
- It is a difficult task to come to grips with the many, and often, conflicting goals
- Lack of confidence in trying to determine priorities
- Appears to be a waste of time when farmers and ranchers fail to see the need for goals

Some farmers and ranchers see their major goal as surviving for another year. Other goals may be contingent on survival of the farm business.

GUIDELINES FOR SETTING GOALS

Obviously individual farmers and ranchers have different goals (Fig. 11). Those who think that making money is the only goal of a farm business may not understand the complexity of the goal setting process. In a Minnesota study of farmers enrolled in farm management programs, a large group ranked "increased earnings" third in a long list of benefits. They named "improvement in management skills" and "better knowledge of the capabilities of yourself and your business" as more important reasons for participating in a farm management program.

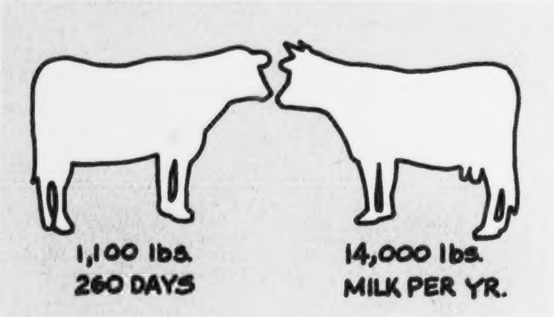

1,100 lbs.
260 DAYS
14,000 lbs.
MILK PER YR.

Fig. 11 — Each Farmer Or Rancher Must Set Goals Specific To Their Operation

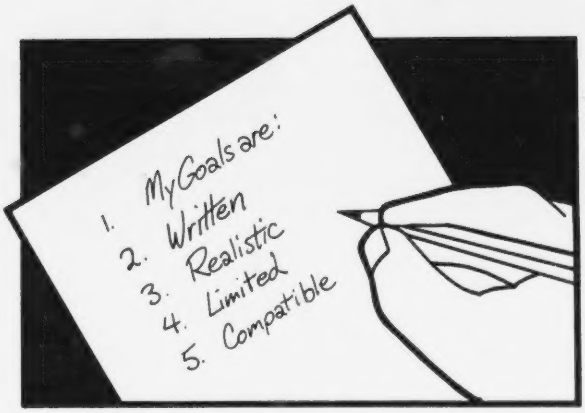


Fig. 12 — There Are Five Guidelines For Setting Goals

There are certain guidelines which are useful for setting goals (Fig. 12). They include:

- The goals should be yours. If the farm business is a family farming operation all of the family members should contribute.

- The goals should be written. Written goals serve as reminders and provide a record.

- Goals should be realistic and attainable. They should be something you can accomplish. They should also be selected in terms of available resources.

- Goals should have target dates. Give yourself time limits. Recognize both short-term and long-term goals. They may need to be modified as resources change or as the family is able to use the resources more efficiently.

- Goals should be compatible. Competition among goals is normal and desirable, but may be frustrating. Watch out for conflicts. Farm business and family goals may have to be adjusted so that they may be accomplished.

EXAMPLES OF AGRIBUSINESS AND FAMILY GOALS

Listed below are several examples of the goals and objectives that a farm family might set:

- Owning a farm
- Having a well-kept farmstead
- Controlling a larger farm business
- Building a house
- Improving the family's standard of living
- Having the highest milk production per cow in the state
- Providing education for the children
- Being a good neighbor
- Making a profit
- Being a community leader
- Having more leisure time

You can probably add to this list. Which are farm business goals and which are family goals? Can you identify conflicts that may occur?

TYPES OF GOALS

There are three basic types of goals (Fig. 13):

- Short-term

- Intermediate-term

- Long-term

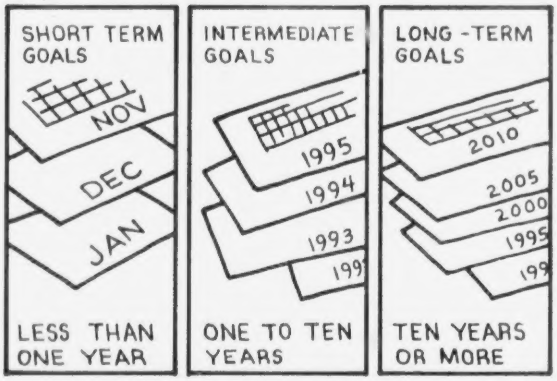


Fig. 13 — Goals Can Be Categorized As Short-Term, Intermediate, Or Long-Term

Short-Term Goals

Short-term goals are normally those that can be achieved in less than one year. They usually provide immediate satisfaction. Examples might include: painting a building, running a soil test to plan fertilizer rates, or finishing a calf.

Intermediate-Term Goals

Intermediate-term goals may require one to ten years for achievement. They are used as a basis for long-term goals. Examples include: raising funds and putting up a barn, or buying a farm.

Long-Term Goals

Long-term goals usually require more than ten years to accomplish. They are needed for a sense of direction. Examples include: becoming a community leader, leading a useful life, becoming a better citizen, personality development, or achieving early retirement.

DETERMINING PRIORITIES OF GOALS

There are several factors that help determine priorities of goals. These factors include:

- Dollar value
  ($100 decisions versus $100,000 decisions)

- Time
  (Are the results comparable to time spent elsewhere?)

- Orderly sequence
  (Do the most important first; avoid jumping from crisis to crisis)

Goals do compete for time, and money (Fig. 14). Examples include: Spending time analyzing records versus tilling the soil or feeding the livestock; going skiing at the lake versus farm chores; adding feeding capacity or new machinery versus painting the farmstead or remodeling the kitchen.

Fig. 14 — Goals Compete For Time And Money

As you can see, management and the decision-making process are keys to the success or failure of the farm business.

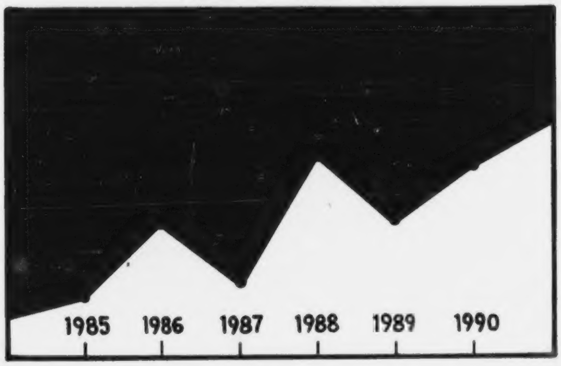


Fig. 15 — Check Long Term Goals Annually

TECHNIQUES IN REACHING GOALS

There are several techniques which will prove helpful to you in accomplishing your goals. These techniques are:

- Have regular checkups
  Review goals at least on an annual basis (Fig. 15).

- Use saved time and effort wisely and effectively.

- Organize efforts on a "things to do" worklist. (Check off completions regularly for satisfaction.)

- Check for slow or nonmoving objectives.
  (You may need to consider: Are funds available? Are the objectives realistic and attainable? Should you consult with agricultural experts?)

- Modify goals as resources change or as the farm business and family use resources more efficiently (Fig. 16).

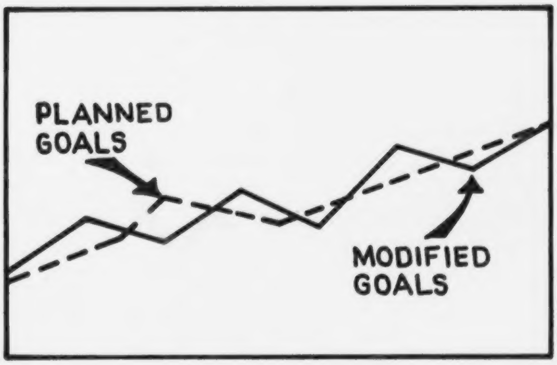


Fig. 16 — Modify Goals As Resources Change

Fig. 17 — Here Is $86,400 Tax Free. How Will You Use It?

ONE LAST THOUGHT

If you were given $86,400 today (Fig. 17) to spend any way you wanted (no strings attached) what would you do? Would you save it for a rainy day? Would you pay off as much debt as you could? Would you invest it? Would you build a new home?

What if you were given $86,400 every day for the rest of your life. What would you do? What would be your priorities?

Isn't it important to plan for today and the future? We each have 86,400 seconds in each day (Fig. 18), no more, no less. What we do with those 86,400 seconds will determine what we accomplish in our lifetime. Plan now. Setting goals will help us determine where we are, where we would like to be, and how we can best get there from here.

Fig. 18 — You Have 86,400 Seconds Each Day To "Spend" Productively. How Should You Spend It?

THE CONTENTS OF THIS BOOK

In this publication we have attempted to provide techniques and procedures used in farm business management. We will discuss:

- Record Keeping
  (The importance and purposes of keeping records, types of record keeping systems, and components of a record book.)

- Financial Analysis
  (Cash flow, net worth, and income statements and their ratios; whole farm and enterprise analysis; and the relationships of the various analyses.)

- Budget Analysis
  (An introduction to the types and uses of budgets, how to use and analyze a partial budget, enterprise budget and whole farm budget, production principles, and the components of cost.)

- Cash-Flow Analysis
  (Cash flow projections and analysis, repayment capacity, identify credit needs, and types and sources of credit.)

- Marketing
  (The principles of supply and demand, marketing functions, and strategies for marketing.)

- Investment Analysis
  (The time value of money, methods of analyzing an investment, financing an investment, risk management, and acquiring assets.)

- Taxes
  (Income tax management with emphasis on maximizing after-tax income.)

- Business Organization
  (The advantages and disadvantages of sole proprietorships, partnerships, corporations, and cooperatives as organizations for doing business.)

- Ag Law
  (The legal rights of farmers and ranchers and the laws affecting them.)

- Computers
  (Ways computers may be used to make farm and ranch decisions.)

- Full Farm Case Study
  (Analyze a farm situation.)

This publication recognizes that some readers do not want to study farm business management from the point of view of the total farm business. With this book they will be able to study some of the aspects of farm and ranch management such as the cost of credit. On the other hand, other readers may be ready to study farm business management from the point of view of the total farm organization and operation. The following chapters give them the basic management principles that are necessary to run a complex agribusiness.

RECORD KEEPING

CHAPTER 2

INTRODUCTION

Without record keeping, the chances of managing a successful business is poor. The many facts and figures involved in conducting business demand a good record keeping system. Most business managers will tell you that records are a very precious asset. Without good records, managers can't make good business decisions.

Here is some of the information that you need to know about record keeping.

- Why you need records
- The kinds of records that you need
- The information that you need
- What to do with the information

WHY KEEP RECORDS?

Two good reasons to keep records are:

- To comply with income tax reporting requirements (Fig. 1)
- To assist in planning and management such as obtain credit, apply for government programs, and decide what to grow or raise (Fig. 2).

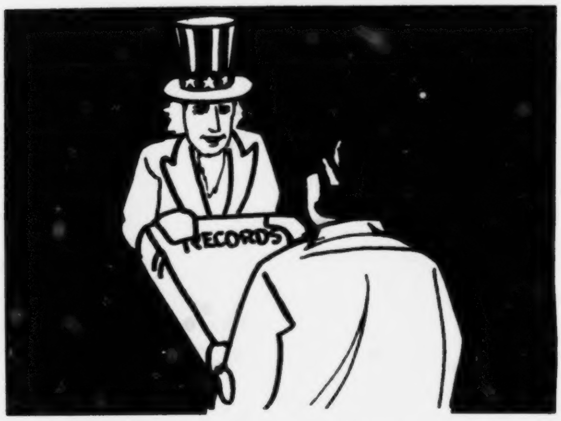


Fig. 1 — Income Tax Reporting Is A Good Reason To Keep Records

Fig. 2 — Good Records Help In Planning And Management Decisions

KINDS OF RECORDS

Four record summaries that are used in farm and ranch business management are:

- Cash flow summary
- Net worth statement
- Income statement
- Whole farm or ranch and detailed-enterprise analysis

Here is more about these records.

A **cash flow summary** is a historical record of monthly cash inflows and outflows for a specified period of time. This is usually for one year.

A **net worth statement** shows the financial condition of a business at a definite point in time. It lists all assets, values of assets, and liabilities of the business. It also is known as a balance sheet, financial statement, or statement of financial condition.

An **income statement** is the financial record that reflects the profitability of the business over a specified period of time. It is also known as a profit and loss statement or an operating statement.

The **whole farm or ranch and detailed enterprise analysis** identifies the factors that affect the profitability and efficiency of all enterprises as well as the entire agribusiness.

WHAT DO YOU DO WITH RECORDS?

Records let you compare past performance with present performance and future goals. Records help you plan the future by providing data that helps you estimate the effect of changes.

Records provide the information that you need to prepare management tools such as:

- Cash flow projections
- Whole farm budgets
- Risk management plans

A **cash flow projection** is an estimate of monthly cash inflows and outflows over a period of time. Usually it is for one year.

The **whole farm or ranch budget** is a written physical and financial plan that is used to compare alternative courses of action for the business.

A **Risk management plan** is the statistical calculation of the probabilities of success.

Farmers and ranchers also use records to help get credit (Fig. 3). With financial statements and cash-flow projections, loan repayment ability can be determined, and a practical repayment schedule can be made.

Fig. 3 — The Proper Records Can Help Obtain Credit

There are many good reasons to keep accurate records. To see how a farm family evaluates the record keeping systems for their situation, let us look at the O'Carroll farm.

THE RECORD SYSTEM

John and Mary O'Carroll and their two children farm 640 acres (Fig. 4). Their major enterprises are feed corn, hay, soybeans, and a hog and cattle operation. The O'Carrolls use file folders to store their cancelled checks and receipts. Each year John and Mary take their file folders to their tax accountant for preparation of their income tax return. They are beginning to find that this method may not be the best for their farm.

Fig. 4 — The O'Carroll Farm Is 640 Acres.

They don't really know how the farm is doing until the accountant is through. The problem is that they only get the accountant's information once a year. Many of their decisions during the year are guesses that are not based on sound facts. John and Mary need records (Fig. 5) that can give them a current picture of their financial and production situation. What the O'Carrolls need to do can be done in four steps:

Fig. 5 — The O'Carrolls Need To Keep Important Records.

STEPS TO SET UP A RECORD SYSTEM

1. Select a record keeping system suited to their needs.

2. Select an accounting system suited to their situation.

3. Determine a method of reporting farm income and expenses.

4. Set up a procedure to get exactly the information needed for records.

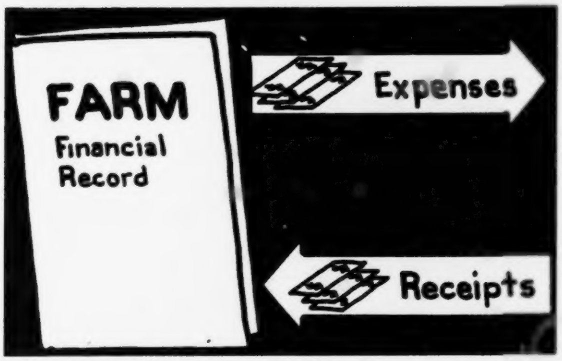


Fig. 6 — Financial Records Show Money Received And Spent

Kinds Of Records

The O'Carrolls will need to have two kinds of records in their record system:

- Financial

- Physical

Financial records (Fig. 6) show money received and expenses owed for the business. **Physical records** (Fig. 7) show the production of crops and livestock. Physical records tell nothing about the financial position or outcome of the business. Physical records include crop yield records, births, deaths, weanings, unpaid operator, family labor, acres planted, and bushels harvested.

Fig. 7 — Physical Records Show The Production Achieved

Factors For Selection

As the O'Carrolls consider farm record systems for their operation, they must consider three factors:

- The amount of information that they want from the records and in what detail

- The amount of time that they can devote to record keeping

- Their record keeping abilities

Levels Of Record Keeping Systems

John and Mary can select from three "levels" of record keeping systems. The three "levels" are:

- Income tax purposes only

- Income taxes plus some business analysis

- A complete farm or ranch business analysis

A record keeping system for income tax purposes meets the requirements for taxpayers who use the cash method for reporting income and expenses. This includes a record of cash receipts, cash expenditures, and depreciation on farm machinery, equipment, breeding livestock and buildings (Fig. 8). The cancelled check and file folder method that the O'Carrolls use is mainly for income tax purposes.

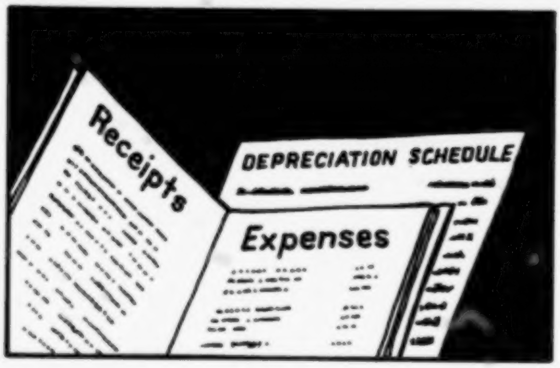


Fig. 8 — The Minimum Records Required For Income Tax Purposes Are Receipts, Expenses, and Depreciation

The second level of farm and ranch record keeping (Fig. 9) is for income taxes plus some business analysis. Records are organized for taking a complete inventory and for recording labor and production information. This system can provide a cash flow summary, net worth statement, income statement, and a procedure for doing a whole farm or ranch analysis.

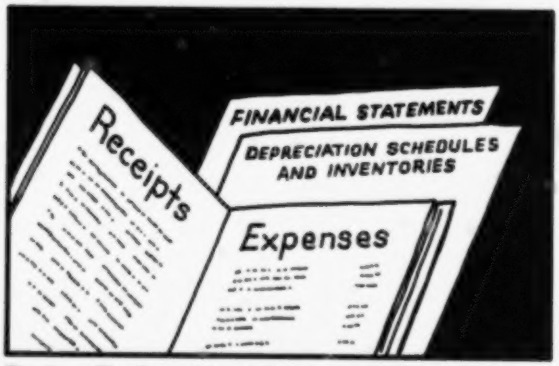


Fig. 9 — The Second Level Of Record Keeping Includes Inventory, Labor And Production, And Financial Statements

Complete business analysis records (Fig. 10) provide a record of cash transactions, physical quantities, inventory, depreciation, and all the information necessary to complete all tax and financial statements. It also provides a whole farm or ranch detailed enterprise analysis. Level three provides the most information and requires the most work.

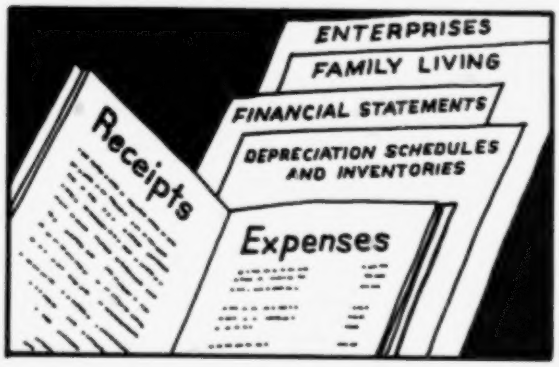


Fig. 10 — The Third Level Of Record Keeping Provides The Most Information And Includes All Level 1 and 2 Records Plus Whole Farm And Enterprise Analysis

Many computer programs and mail-in computerized records services provide level three record keeping systems. There also are many home computer software programs that have been developed for all of the three levels of record keeping. See Chapter 12 for computer applications.

Selection Chart

Before the O'Carrolls can pick a record keeping system, they must figure out what records they will have to keep in order to obtain the desired information. They may not be able to keep all the information for a level three system. The following Records and Information Planning Chart help John and Mary figure out what they can do.

NOTE: There are six X's in the column under income tax. The X's tell you that six records are necessary to provide the information for filing an income tax return. To the left of each X is the name of the particular record that is needed. Records for an income tax return are:

- Farm income and expenses
- Nonfarm tax deductions
- Nonfarm income and expense
- Debt payments
- Depreciation schedule
- Hired help

The chart tells you what information is needed to make each kind of record. You must be able to provide all of the information to make a usable record.

Records and Information Planning Chart

	Information Needed					
Records Needed	Income Tax	Income Statement	Net Worth Statement	Cash Flow Statement	Whole Farm Analysis	Detailed Enterprise Analysis
Financial Transactions						
Farm income and expenses	X	X		X	X	X
Non farm tax deductions	X					
Nonfarm income and Expense	X			X		
Debt payments	X			X		
Inventory						
Depreciation schedule	X	X	X		X	X
Other farm assets		X	X		X	X
Non farm assets			X		X	
Record of debts			X		X	
Production Records						
Feed records					X	X
Livestock production					X	X
Livestock expenses						X
Crop Yields					X	X
Crop expenses						X
Labor Records						
Operator labor					X	X
Family labor					X	X
Hired labor	X				X	X

SUMMARY

The O'Carrolls find that they can put an X in all of the record boxes that are necessary to do a level 3, whole farm business analysis. They tentatively decide to use this level three system. They can make the final decision later when they have more facts.

Remember there are four steps in setting up a records system:

1. Select a record keeping system suited to needs

2. Select an accounting system suited to the situation

3. Determine a method of reporting income and expenses

4. Set up a procedure to get exactly the information needed

John and Mary have done the first step. Next the O'Carrolls must pick an accounting system and a method of reporting income and expenses.

ACCOUNTING SYSTEM

There are two accounting systems:

- Double-entry

- Single-entry

A **double-entry** accounting system keeps track of the balance between assets and liabilities. The double-entry system also helps to keep track of current changes each time that a transaction is made. In double-entry accounting, each credit transaction must be balanced by a debit transaction (Fig. 11).

Single-entry accounting (Fig. 12) is mostly concerned with the owner's equity accounts. Referring again to debits and credits, a credit to owner's equity is caused by a receipt (increase), and a debit is caused by an expense (decrease). Single-entry accounting lists the receipts and expenses without any real effort to maintain a current balance between them on paper. The current balance is mainly kept as a check when accounts are complex. The single-entry system still keeps track of asset accounts (capital purchases and sales, depreciation schedules, and liability accounts or credit.)

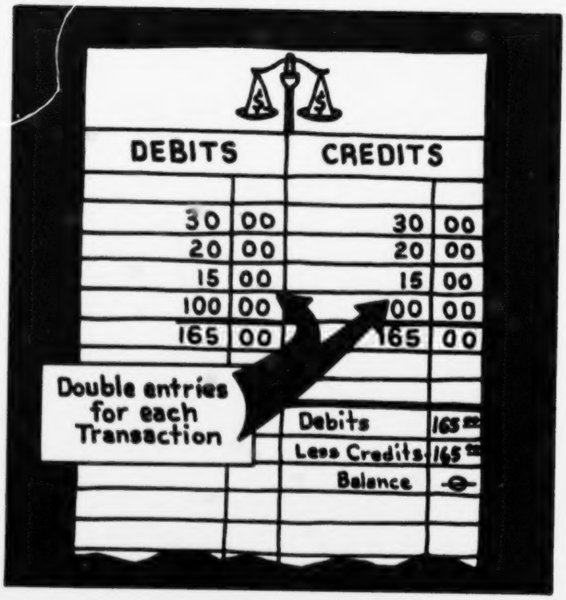


Fig. 11 — Double-Entry Accounting Requires A Credit And Debit Entry For Each Transaction

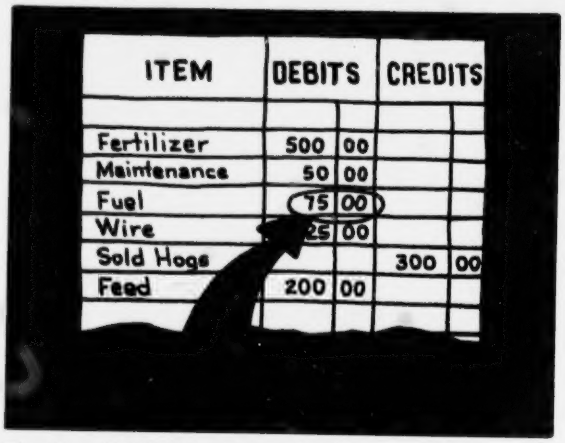


Fig. 12 — Single-Entry Accounting Requires Only One Entry For Each Transaction

John and Mary both feel that single-entry accounting will do the job for them. It keeps track of their assets and liabilities adequately and doesn't require the amount of bookkeeping involved in a double-entry system.

Now the O'Carrolls have tentatively selected:

- A record keeping system

- An accounting system

Next they need a method of reporting income and expenses.

REPORTING INCOME AND EXPENSES

There are two methods of reporting income and expenses:

- Cash method
- Accrual method

CASH METHOD

To use the **cash method** to report income and expenses, income must be reported in the year the cash, or its equivalent, is received. Deductions for farm expenses are made in the year that the cash is paid out. The cost of items that are purchased for resale are not deductible until the year that the item is sold (Fig. 13). The profit from the sale of items that are purchased for resale is figured by deducting the cost from the sale price in the year that the sale occurs.

The **cash method** is simple from an income tax standpoint. Inventories are not considered. Other **advantages** are:

- Flexibility — **choose** when to take income and deduct expenses
- More favorable capital gains tax treatment than accrual method
- If the farmer or rancher shows a profit, cash is available to pay the income tax

Disadvantages of the cash method:

- Expenses are not deductible until cash is paid
- Inventory adjustments must be made to compute an income statement and analysis information
- Income may be erratic

ACCRUAL METHOD

To use the **accrual method** to report income and expenses, inventories must be used to determine gross income. Sales are treated as income when the price of the item is **recoverable**, or could have been received. Expenses are deductible when payable (Fig. 14).

Advantages of the accrual method:

- Level out peaks and valleys of income without year-end manipulations
- Easier to determine net farm income and analyze the strong and weak points of the farm business from year to year than with the cash method

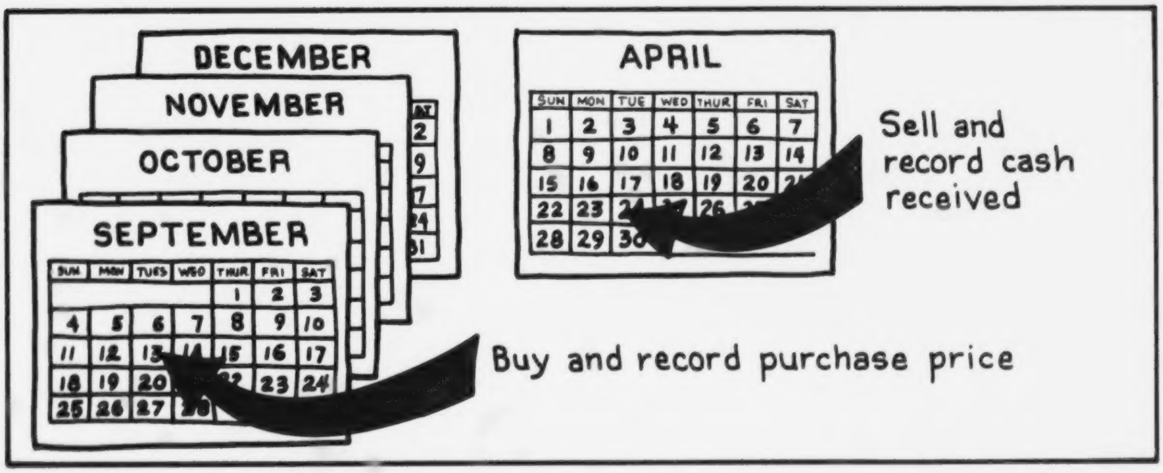

DECEMBER
NOVEMBER
OCTOBER
SEPTEMBER
APRIL
Sell and record cash received
Buy and record purchase price

Fig. 13 — The Cash Method Of Reporting Income And Expenses Allows Deduction Of The Cost Of Items For Resale Only During The Year The Items Are Sold.

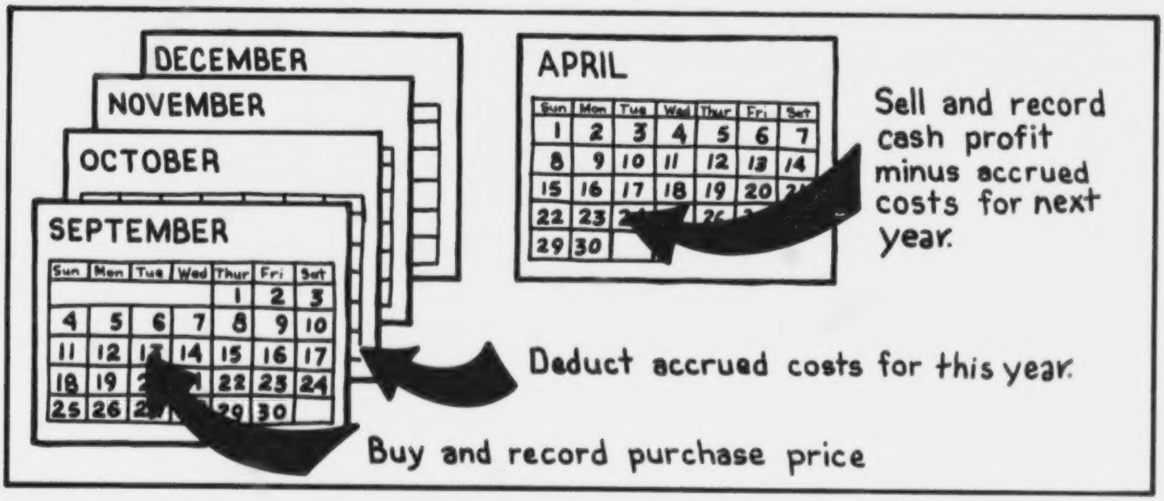

DECEMBER
NOVEMBER
OCTOBER
SEPTEMBER
APRIL
Sell and record cash profit minus accrued costs for next year.
Deduct accrued costs for this year.
Buy and record purchase price

Fig. 14 — The Accrual Method Of Reporting Income And Expenses Allows The Deduction Of Accrued Expenses During Each Year Incurred

A primary **disadvantage** of the accrual method is the detailed and complex records that are required. All items must be carried in the inventory at a value determined by an approved Internal Revenue Service method. Another disadvantage is that you work with abstract figures. In some years profit may appear only on paper, and you may have to borrow money to pay income taxes. The actual cash position may be difficult to determine. Also there are less favorable capital gains tax benefits than with the cash method.

Profit is measured as the difference between the inventory value and the sale price. Capitalized value is taxed as ordinary income.

SUMMARY

The O'Carrolls carefully study their farming operation, review their past experiences with record keeping, and determine the amount of time that they can devote to record keeping. The O'Carrolls select a level three **Complete Farm Business Analysis** record keeping system because:

- Lenders require a coordinated financial statement (cash flow summary and projection, net worth statement, and income statement).
- John and Mary want a current picture of their financial and production situation.

As John and Mary consider their experiences with farm record keeping, they decide to use the **single-entry** accounting procedure. They pick the **cash method** for reporting farm income and expenses because of its simplicity, flexibility, and the fact that it provides cash on hand to pay taxes. Other circumstances may require different choices. There is no **single best** record keeping system for everyone.

John and Mary build the foundation for a practical record system that they can trust. They chose a record keeping system that is best for their situation.

Now the O'Carrolls take the fourth step in developing their record keeping system. They set up the procedures to get exactly **the information that they need to produce the records that they want.**

THE PROCEDURES

John and Mary learn four ideas that help them set up their record keeping system. These ideas for record keeping can help everyone:

- Learn about the record keeping system **before** starting to use it. Read as much about the subject as possible. If you are going to use a computer, consider running a trial farm or at least several trial entries. If you use a record book, study the index and practice finding parts of the book.

- Develop a habit of keeping the record system up to date. Make entries regularly. Enter complete information including date, quantity, weight, description, and name of the person or firm that you deal with.

- Do most business through a bank account. Deposit all farm or ranch income in the bank account. Identify all items on the deposit slip, such as borrowed money, gifts, receipts (not subject to income tax), livestock (by head and pounds), crops by units (tons, bushels), and wages.

- Get the bank statement each month and reconcile the checkbook and record keeping system with it.

RECORD KEEPING PROCEDURE STEPS

The O'Carrolls develop a step-by-step procedure for doing their record keeping. They:

1. Enter the **beginning-of-the-year inventories** into their record. These are inventories of all owned assets, accounts payable and receivable, and the beginning cash balance at the beginning of the year.

2. Set up **depreciation schedules.** Most farmers and ranchers depend on an income tax accountant to set up their depreciation schedules.

3. Enter **receipts, expenses, and production** into the record. Production records are hired labor, unpaid operator and family labor, crop and livestock production, breeding and mortality records, feed allocation, and home-use records.

4. Enter the **end-of-the-year inventories** into the record.

5. Complete **the depreciation** schedules at the end-of-the-year.

6. **Complete the farm or ranch analysis.** The complete business analysis includes filing income tax returns, financial statements, a whole farm or ranch and detailed enterprise analysis, and a cash flow projection for the coming year.

This is a summary of the O'Carrolls' record keeping procedures. Now, let us look at it in more detail.

BEGINNING-OF-THE-YEAR INVENTORY

As the O'Carrolls take their beginning-of-the-year inventory, more questions are asked (Fig. 15). Why should inventory records be kept? When should we inventory? What should be inventoried? How do we determine values for the items that we inventory?

Fig. 15 — The O'Carrolls Consider Several Questions About Inventory Records

WHY INVENTORY?

You must inventory in order:

- To get a true picture of the business and nonbusiness financial situation. This may be done by listing all assets and liabilities on a net worth statement.
- To reflect noncash income and expenses. The income statement will state differences between cash receipts and cash expenses, and between beginning and ending inventories. It also will determine the net business income.
- To provide a management tool. Inventories are important in accrual formulas that are used to develop a whole farm or ranch and detailed enterprise analysis of the business operation.
- To place values on business and nonbusiness assets. These inventory values may be used to determine collateral when obtaining credit. They also may be used to determine insurance needs and to complete an estate planning inventory or settlement.

WHEN TO INVENTORY

Two primary factors determine inventory date:

- Significance in the business operation
- Convenience to the operator

Some significant dates:

- Date when work begins for the year's crop production
- Date tenant moves to farm
- Date of lease renewal
- Date livestock is shifted from winter feed to summer pasture

Convenient dates:

- When there is little else to do
- When there is a small quantity of assets
- When completing financial records and income tax information

For most farms and ranches, January 1 seems to be the most convenient time because of income tax and management purposes. That is the date that the O'Carrolls pick for their yearly inventory.

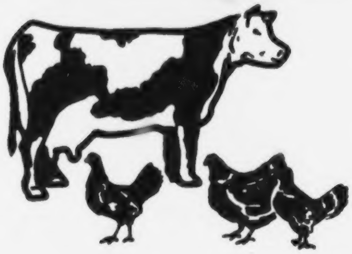
The inventory date must be the same time each year so that accurate comparisons of financial performance may be made. Also the ending inventory of one year is automatically the beginning inventory for the next year.

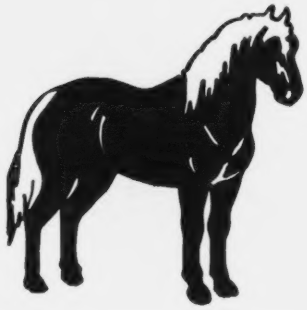
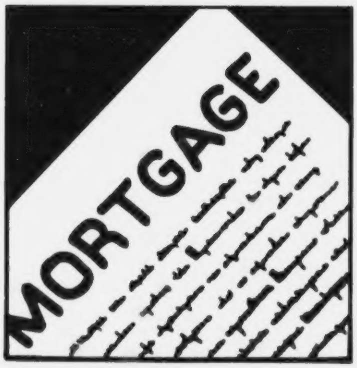
WHAT TO INVENTORY?

John and Mary know why they must inventory, and when to do it. What should they include?

Here in table form is a list of items, with examples, of what should be inventoried. John and Mary use this list and check the items that they have to count.

ITEMS TO INVENTORY

Item	Item Description	Examples
	All unsold items at end of tax year	Harvested crops in storage; raised livestock held primarily for market; crops in storage under government loan which have not been entered as farm income
	**All items purchased for resale but not yet sold**	Livestock and poultry purchased for resale; hedging contracts
FERTILIZER FERTILIZER FERTILIZER FERTILIZER X tane X tane	**Crop and livestock supplies**	Purchased feed or seed, raised feed or seed, production costs of growing crops, fertilizer, fuel, chemicals, shop supplies

	**Capital assets**	Livestock held for draft, breeding, dairy, or sporting purposes (raised or purchased); machinery and equipment; buildings; land
	Accounts receivable	Money that is owed to you at the end of the year. This may occur if someone purchased a load of hay from you but has not paid for it yet
	**Accounts payable**	Money that you owe for operating expenses, such as a feed bill at local co-op
	Liabilities	Bank notes, machinery notes, land mortgage, operating notes (Usually broken down by the length of time you have to pay the debt)

As the O'Carrolls enter into the actual inventory process they encounter two problems:

- How to make the count
- How to value the item

The Count

Two guidelines are useful when making a count:

- Measure quantities in commonly used units (Fig. 16). Commonly used units are bushels for small grains, hundredweight and head for livestock, tons for hay, and pounds and bales for cotton. Convert measured quantities into meaningful units if necessary. For example, count the number of bales of hay in a barn and convert to tons. Tables and conversion formulas are available.
- Group like items (Fig. 17). Livestock is usually put into groups of beef, swine, sheep, dairy, and horses. The livestock groups are then divided into type, age, sex, and purpose.

Take the inventory on a single day. If the inventory date is December 31 but the physical count is not made until January 5, an animal born on January 2 should not be included in the inventory. This animal will be counted next year.

John and Mary know what to count now, but how do they put dollar values on the items?

INVENTORY VALUES

There are two methods of putting a dollar value on farm inventories. They are **book value** and **current value** (Fig. 18). The following table, listing methods of valuing inventories and guidelines for use, helps the O'Carrolls by giving them a formula for valuing most items on the farm.

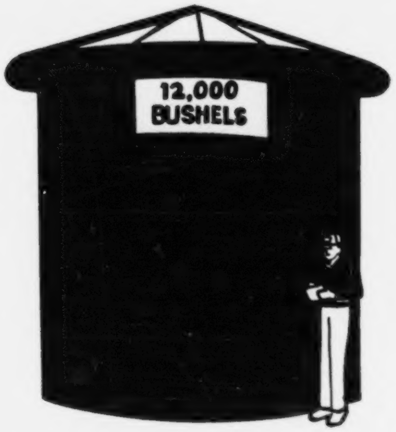


Fig. 16 — When Counting For Inventory, Measure Quantities In Commonly Used Units

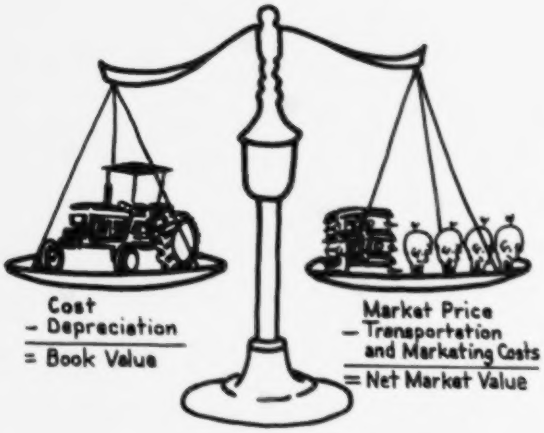


Fig. 18 — Either Book Value Or Market Value Is Used To Assign Dollar Value to Inventory

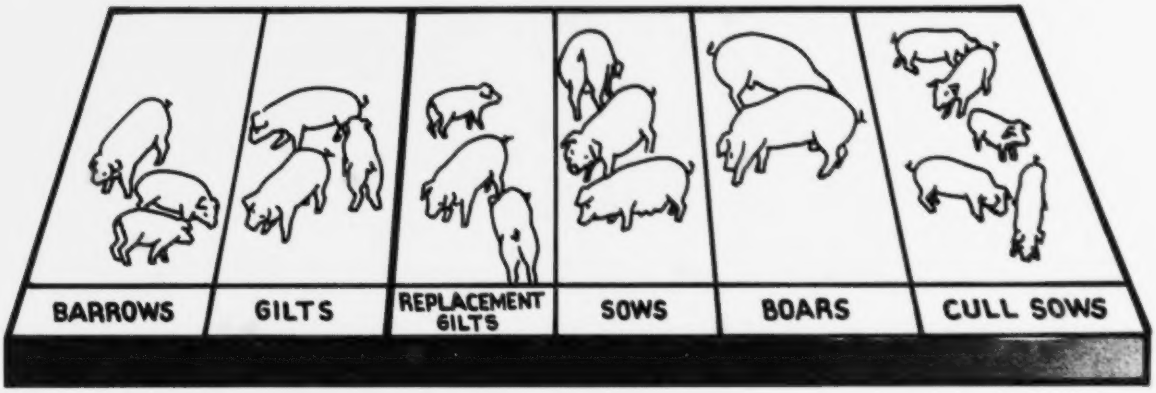
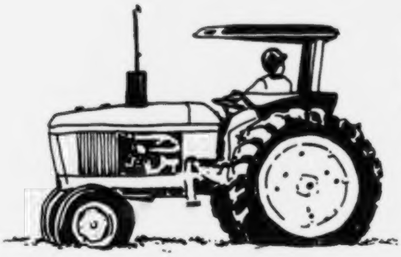
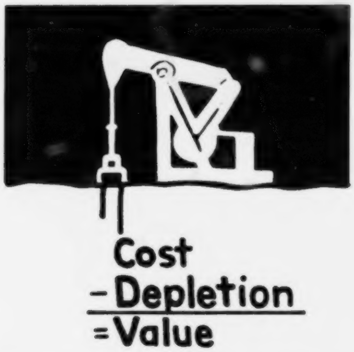
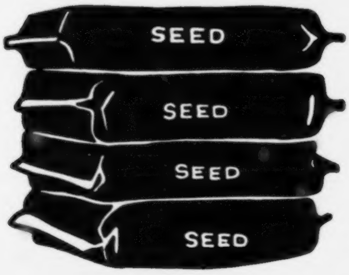
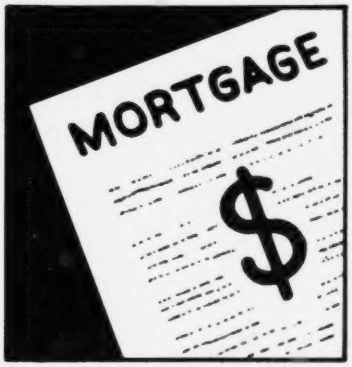


Fig. 17 — Group Like Items When Compiling Inventory

VALUING AN INVENTORY

	Method of Valuation	Guidelines
	**Cost minus depreciation** (Determined by the depreciable balance from the depreciation schedule) Note: Sometimes called the book value method	Assets that provide services to the farm business for a period longer than one year and become less valuable in the process Examples: machinery, equipment, purchased breeding livestock, buildings, and fences
	**Cost minus depletion** (Determined by income tax guidelines)	Assets value changes with the amount of resource displaced or removed Examples: oil and gas wells, gravel pits, timber stands
	**Market cost** (Price at which an item was purchased)	Items that have been purchased recently and will be used within a relatively short time Examples: feed, fuel, fertilizer, seed, supplies, other operating inputs, livestock purchased for resale
	Net market price (Value of an item at the market place less transportation and marketing charges)	Money farmer or rancher brings home from the sale of a product. Item with a well established market price Examples: grain on hand, raised breeding livestock, hay on hand

	Farm production costs (Actual amount invested or cost of producing a farm asset. Production costs should not include profit, interest on investment or the opportunity cost of the operator's labor and management)	Assets that have been produced on the farm and will be used on the farm Examples: growing crops and raised breeding livestock
SALE TODAY Value at Market −Transport and Marketing = Net Market Price	**Cost or market value** (Lower of production costs or original purchase price compared to current market price)	Examples: feed, grain on hand, machinery and equipment, raised livestock Note: this method is probably too conservative when prices are increasing and not conservative enough when prices are falling.
	**Actual amount** (Value of liability owed)	Examples: accounts payable, accounts receivable, notes, mortgages

Values and methods of valuation for a financial statement are determined by the purpose of the statement. **No matter which method is selected to value assets, use the same method consistently. Consistency eliminates errors.**

A NOTE ABOUT CURRENT VALUE VERSUS BOOK VALUE

There is disagreement about whether to use current values or book values when completing a financial statement.

Current values are the cash value of assets based on actual cost or market value less sale expenses.

Book values are the tax or cost basis of assets and liabilities, including adjustments and prior depreciation taken.

The O'Carrolls find that the two methods are used for different purposes:

- **Current value** shows assets at fair market price, and is usually used to establish credit and to determine acceptable levels of insurance.

- **Book value** shows assets valued on an adjusted **tax basis** or **depreciable balance**.

Adjusted tax basis is the original cost of an asset plus the value of improvements or alterations less the cost of depreciation, losses or depletion. **Depreciable balance** is similar to book value.

Book value is usually used for income tax purposes and for estate planning. John and Mary feel book value is the most practical choice for them because they don't always know what the fair market price of an item is. Now John and Mary can complete their inventory and post their results in their records.

SUMMARY

Now the O'Carrolls have:

- A record keeping system

- An accounting system

- A method of reporting income and expenses

- A procedure for recording information

- A method for determining the value of their inventory.

POSTING RECORDS

After the O'Carrolls complete their beginning inventory, and get a copy of their depreciation schedule from their income tax accountant, they post the entries in their record keeping system. To post the inventory into the record, John and Mary need to understand several definitions so that they can put the inventory items in the correct place. The O'Carrolls ask the following questions:

- What are cash receipts and cash expenditures?

- What is business income?

- What is nonbusiness income?

- What is business expense?

- What is nonbusiness expense?

- What is a cash flow summary?

Here are the answers to their questions:

CASH RECEIPTS

Cash receipts are funds flowing IN (Fig. 19). These funds include:

- Business income
- Income from the sale of items purchased for resale
- Income from the sale of capital assets
- Money borrowed or accounts receivable paid
- Income from nonfarm sources

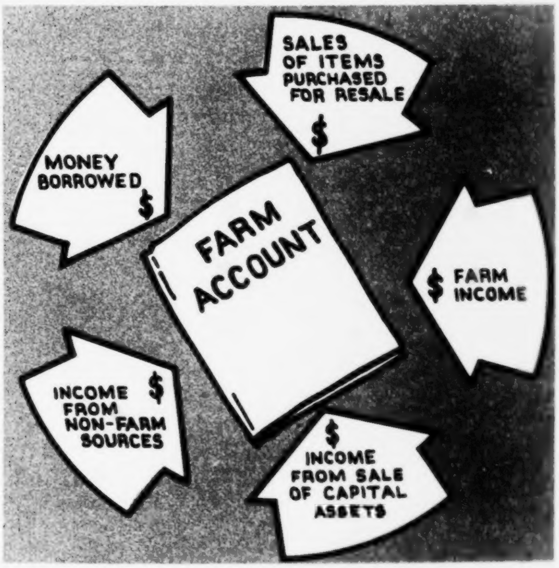

SALES OF ITEMS PURCHASED FOR RESALE $
MONEY BORROWED $
FARM ACCOUNT
$ FARM INCOME
INCOME $ FROM NON-FARM SOURCES
$ INCOME FROM SALE OF CAPITAL ASSETS

Fig. 19 — Cash Receipts Are Income Received

CASH EXPENDITURES

Cash expenditures are funds flowing OUT (Fig. 20). These funds may include:

- Business expenses
- Purchase of items for resale
- Purchase of capital assets
- Principal paid or money paid on accounts payable
- Nonbusiness investments
- Family living expenses

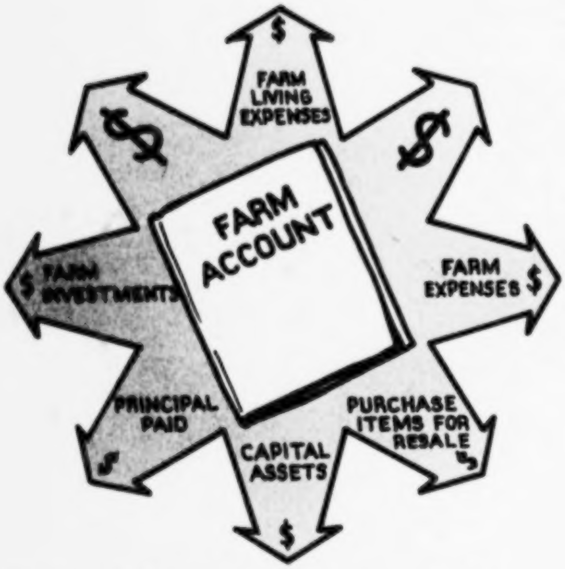
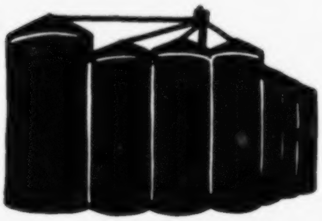
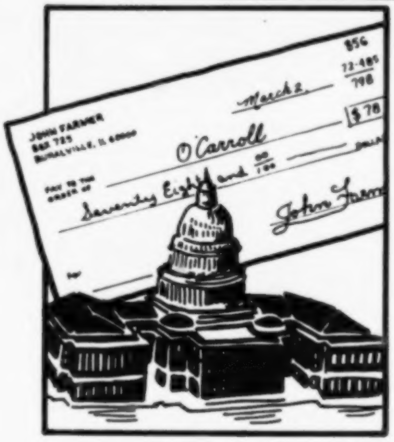
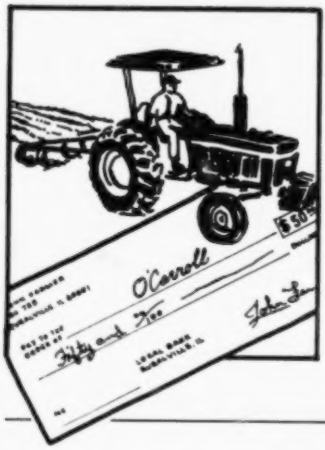
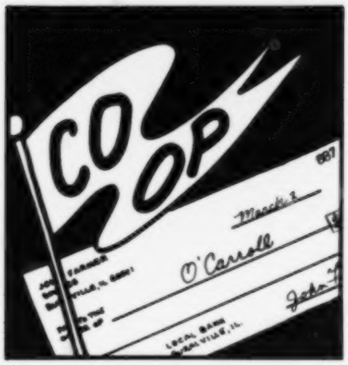


Fig. 20 — Cash Expenditures Are Expenses Paid Out

FARM OR RANCH INCOME

The following table of farm or ranch income is from, *Publication 225 Farmer's Tax Guide,* which is available from the Internal Revenue Service. The O'Carrolls use it when they aren't sure what category to put an inventory item into.

Action	Farm Income	Examples
	**Crop sales** (Receipts from sale of raised crops) (Note: For record keeping purposes always include quantity of crop sold)	Wheat, cotton, peanuts, alfalfa hay, soybeans, corn, horticulture crops, milo
 John Farmer March 2 $ 78 O'Carroll Seventy Eight and 00/100 John Farmer	**Government payments** (Receipts from participation in government programs)	SCS conservation program payments, disaster payments, ASCS deficiency payments
 $ 50 O'Carroll Fifty and 00/100 John Farmer Local Bank	**Custom Work** (Payment received for doing machine work for someone else)	Plowing, custom harvesting, cultivating, spraying

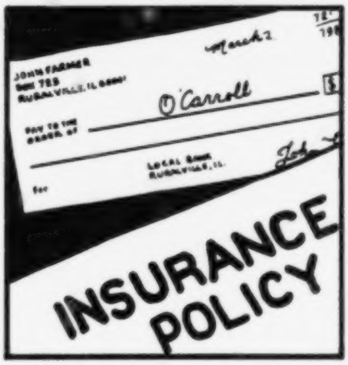


Patronage dividends

(Dividends received from a cooperative)

Includes both cash received and capital stock

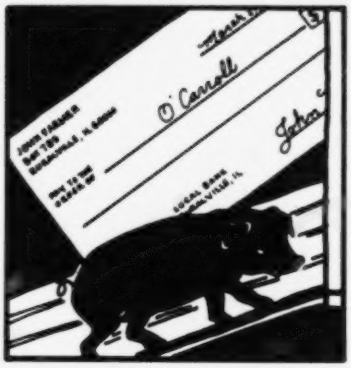
Note: Capital stock may be shown as a deduction, as a capital purchase or an account receivable



Refunds

(Amount reimbursed for an item for which you have taken a deduction)

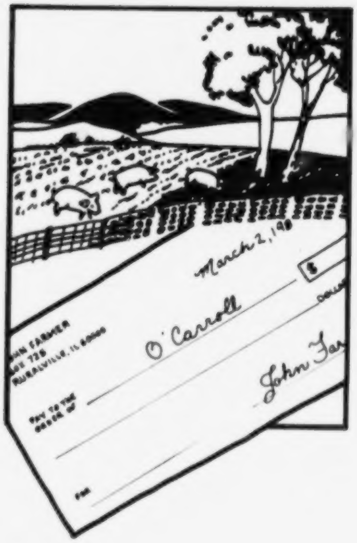
Expense reimbursement, rebate on purchased machinery, proceeds from an insurance claim



Resales

(Receipts from sale of items purchased for resale. Only net gain is taxable)

Baler wire, twine, wire panels, supplies, livestock



Cash rent

(Rent you receive if you materially participate in farming operation)

Note: Generally the rent you receive for the use of your farm land is rental income, not farm income. If you did not materially participate in the farm for which you received rent payment, the income is not farm income and must be reported as non-farm rental income.

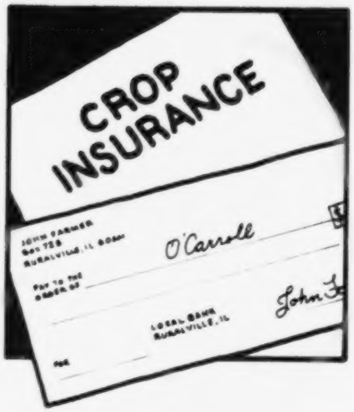
You take someone else's cattle to pasture and assume responsibility for furnishing water and salt for a fee; cash paid for wheat or small grain pasture for grazing

Commodity Credit loans

(CCC)

(Proceeds received from participating in CCC loan program.)

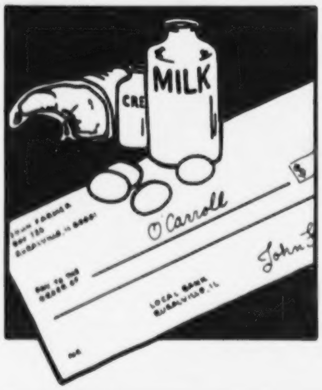
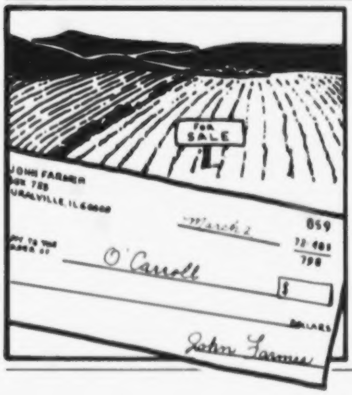
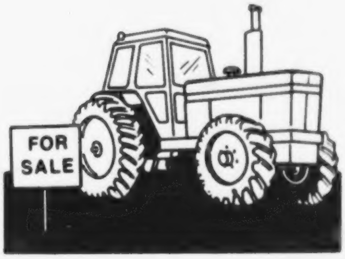
You can elect to report a CCC loan as income in the year you receive the loan or in the year the commodity is sold. Once you have reported the loan as income in the year received, you must report all succeeding loans in the same way unless you obtain the permission of the IRS.



Crop insurance

(Proceeds received as the result of crop damage. Generally must report proceeds received in the year you receive them. There is an election to postpone reporting the proceeds to the following year if the cash method is used.)

Hail damage, flooding, drought

	**Livestock products** (Receipts from products produced by livestock)	Milk, eggs, wool, meat
	Raised nonbreeding livestock (Receipts from sale of livestock not included in breeding herd) Note: Be sure to include number of head and pounds when recording receipts	Calves, pigs, lambs, yearling steers and heifers, barrows, wethers
	**Items purchased for resale** (Receipts from the sale of items purchased for resale) Note: For income tax purposes you will need to have a record of the purchase cost of the resale item.	Livestock, grain, hedging contracts
	**Capital sales** (Receipts from the sale of capital assets) Note: For income tax purposes the sale of capital assets is handled separately from ordinary farm income. There are special tax rules for capital gains and recapturing depreciation.	Machinery, equipment, land, breeding livestock

NONFARM INCOME

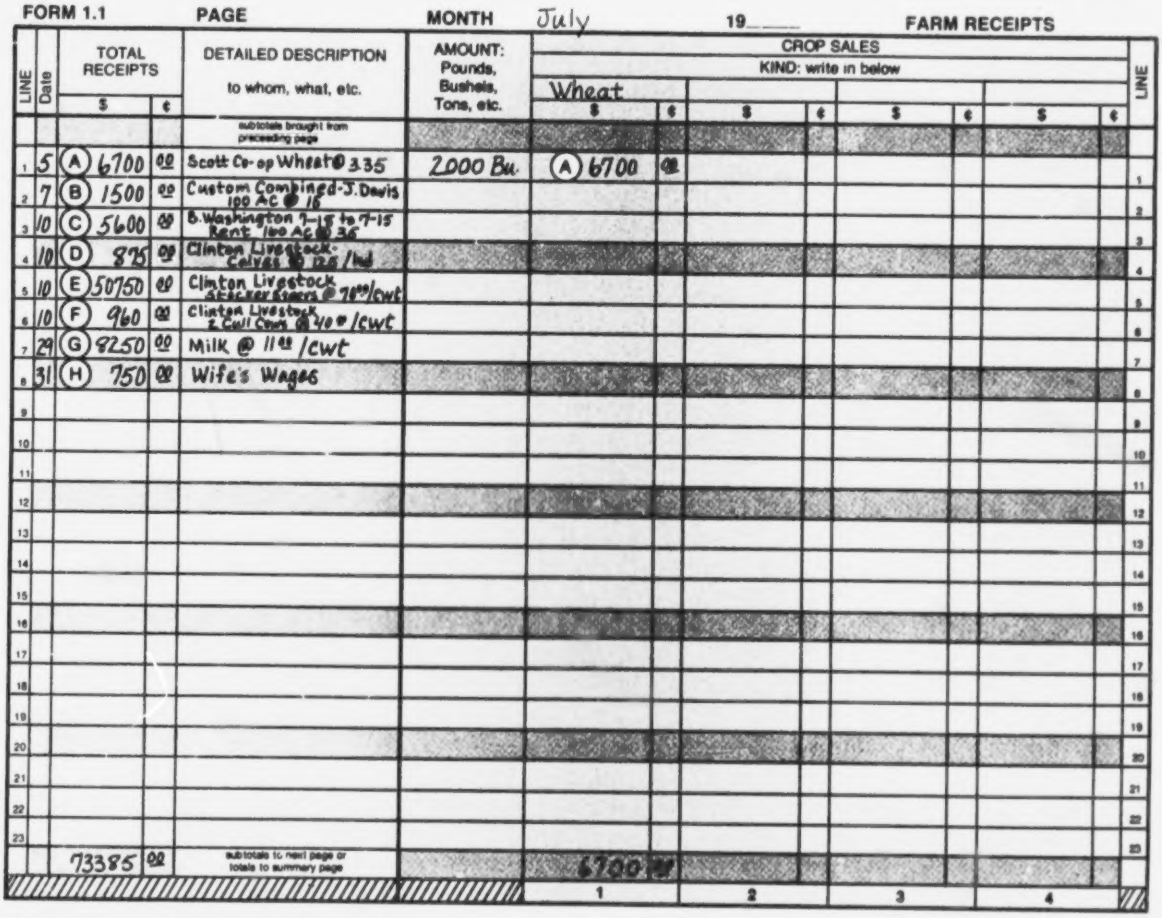
Nonfarm income is income received from all sources other than farming. Sources of nonfarm income:

- *Wages, salaries, and other earnings. Always include gross wages as nonfarm income and deductions from wages as nonfarm expenses.*
- *Investments such as dividends received, stock distributions, partnership income, investment clubs, and income from nonfarm business.*
- *Depletion income from oil and gas royalties, mineral lease bonuses, gravel sales, and timber sales.*
- *Interest received from savings accounts, NOW checking accounts, and savings bond.*
- *Rental income from rent houses, for use of farm land, income received from sale of crop shares.*
- *Nontaxable income such as gifts from others, inheritances, life insurance proceeds, interest on tax-free bonds, social security benefits, money borrowed, payment from loans to other people, and reimbursement of nonbusiness expenses.*

SUMMARY

Now that the O'Carrolls know exactly what items are farm receipts, they can enter their receipts in the records. Here are some examples of record forms for posting receipts. Many kinds and variations of forms exist, but these represent the average forms (Fig. 21, Fig. 22).

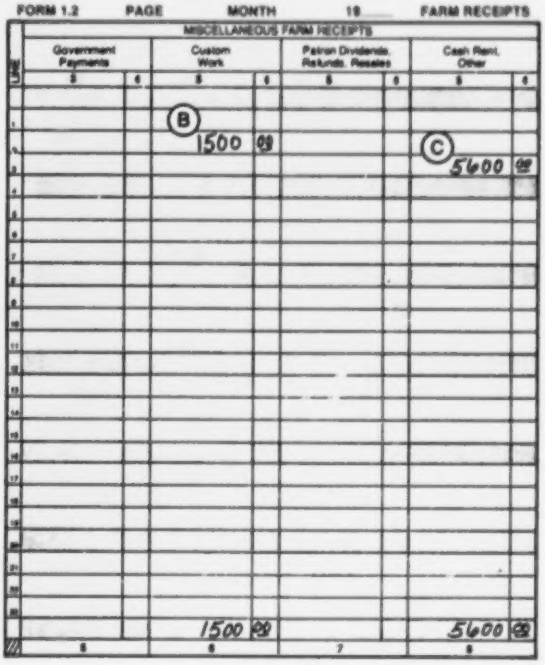
Look at the entries to see what John and Mary record as income received (receipts).



FORM 1.1 PAGE MONTH July 19___ FARM RECEIPTS

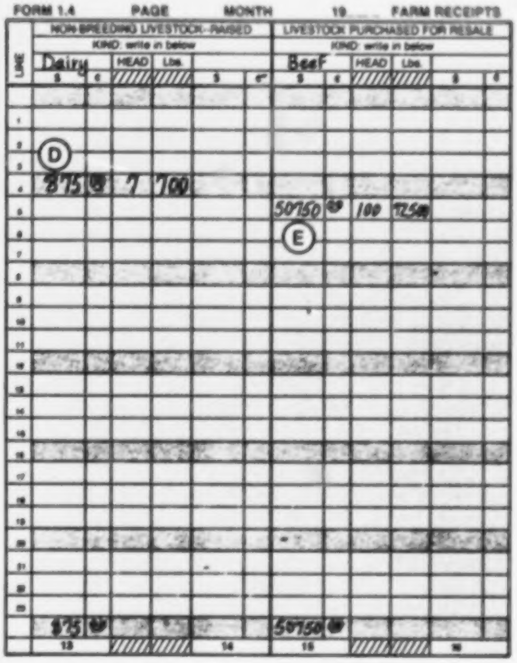
LINE	Date	TOTAL RECEIPTS $	¢	DETAILED DESCRIPTION to whom, what, etc.	AMOUNT: Pounds, Bushels, Tons, etc.	CROP SALES KIND: write in below Wheat $	¢	$	¢	$	¢	$	¢	LINE
				subtotals brought from preceding page										
1	5	Ⓐ 6700	00	Scott Co-op Wheat @ 3.35	2000 Bu.	Ⓐ 6700	00							1
2	7	Ⓑ 1500	00	Custom Combined-J. Davis 100 AC @ 15										2
3	10	Ⓒ 5600	00	B. Washington 7-15 to 7-15 Rent 160 AC @ 35										3
4	10	Ⓓ 875	00	Clinton Livestock- Calves @ 125/hd										4
5	10	Ⓔ 50750	00	Clinton Livestock Stocker Steers @ 70^{00}/cwt										5
6	10	Ⓕ 960	00	Clinton Livestock 2 Cull Cows @ 40^{00}/cwt										6
7	29	Ⓖ 8250	00	Milk @ 11^{00}/cwt										7
8	31	Ⓗ 750	00	Wife's Wages										8
9														9
10														10
11														11
12														12
13														13
14														14
15														15
16														16
17														17
18														18
19														19
20														20
21														21
22														22
23														23
		73385	00	subtotals to next page or totals to summary page		6700	00							
						1		2		3		4		

Fig. 21 — Total Farm Receipt Summary. These Entries Are Broken Down Into Detailed Listings In Fig 22.



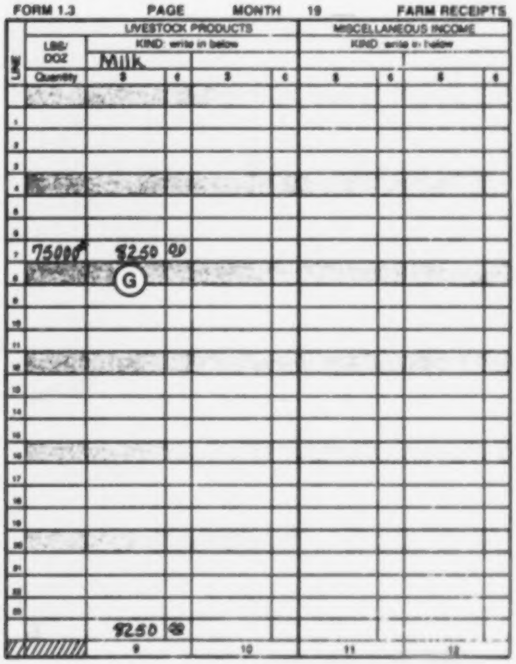
FORM 1.2 PAGE MONTH 19___ FARM RECEIPTS

LINE	MISCELLANEOUS FARM RECEIPTS							
	Government Payments		Custom Work		Patron Dividends, Refunds, Resales		Cash Rent, Other	
	$	¢	$	¢	$	¢	$	¢
2			Ⓑ 1500	00				
3							Ⓒ 5600	00
			1500	00			5600	00
	5		6		7		8	



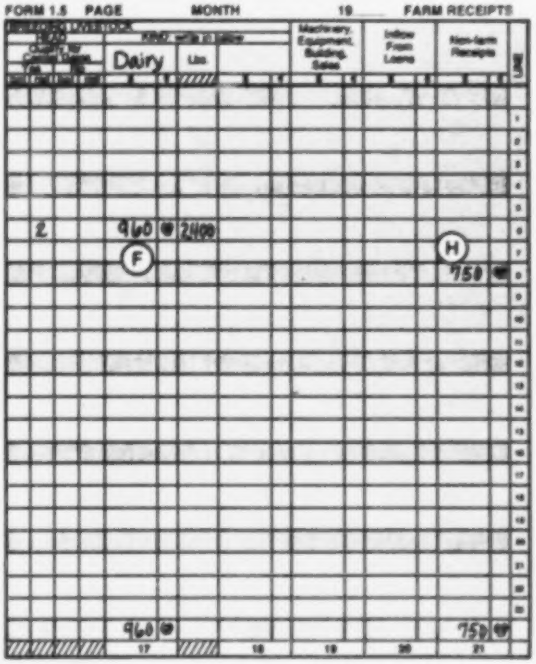
FORM 1.4 PAGE MONTH 19___ FARM RECEIPTS

LINE	NON-BREEDING LIVESTOCK-RAISED						LIVESTOCK PURCHASED FOR RESALE					
	KIND: write in below						KIND: write in below					
	Dairy		HEAD	Lbs.			Beef		HEAD	Lbs.		
	$	¢			$	¢	$	¢			$	¢
4	Ⓓ 875	00	7	700								
5							Ⓔ 50750	00	100	72500		
	875	00					50750	00				
	13				14		15				16	



FORM 1.3 PAGE MONTH 19___ FARM RECEIPTS

LINE	LIVESTOCK PRODUCTS					MISCELLANEOUS INCOME			
	LBS/DOZ	KIND: write in below				KIND: write in below			
		Milk							
	Quantity	$	¢	$	¢	$	¢	$	¢
7	75000	Ⓖ 8250	00						
		8250	00						
		9		10		11		12	



FORM 1.5 PAGE MONTH 19___ FARM RECEIPTS

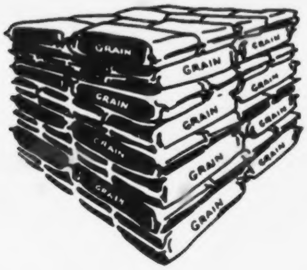
BREEDING LIVESTOCK								Machinery, Equipment, Building, Sales		Inflow From Loans		Non-farm Receipts		LINE
HEAD				KIND: write in below										
				Dairy		Lbs.								
				$	¢		$	$	¢	$	¢	$	¢	
2				Ⓕ 960	00	2400								7
												Ⓗ 750	00	8
				960	00							750	00	
				17			18	19		20		21		

Fig. 22 — Sample Forms For Recording Receipts By Subject. Circled Letters Correspond To Entries In Fig. 21.

BUSINESS EXPENSES

Business expenses are the next items that John and Mary must post. Again, a clear listing of items in this category helps John and Mary put items in the right box. The following table gives a good idea of what most people count as business expenses.

	Expense	Example
	Hired labor (Reasonable wages paid for regular farm labor, piecework contract labor, and other forms of labor hired to perform farming operations) Note: Hired labor may be subject to social security tax	Farm laborers, cotton choppers, wages paid to farmer's or rancher's children, cost of boarding labor
	Repairs and maintenance (Amounts spent for supplies necessary to maintain assets used in the farm business. Repairs to depreciable property that substantially prolong the life of the property or that increase its value or adapt it to a different use are capital expenses and must be depreciated.)	Repainting, replacing shingles and supports of farm buildings, rebuilding fences, minor overhauls of farm machinery and equipment Note: If you repair the barn roof, the cost is deductible, but if you replace the roof, it is a capital expense.
	Interest paid (Amount paid on farm mortgages and other obligations incurred to carry on the farm business)	Interest paid on loans for farm assets Note: Generally, interest paid in advance is not deductible until due.



Feed

(Amounts paid for feed to be consumed by livestock)

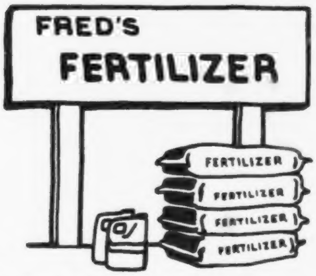
Hay, supplement, grain, prepared feeds

Seeds and plants

(Amounts paid for seeds and plants used in farming)

Wheat seed, cotton seed, tomato plants

Note: Seed and plants used in a garden planted for home use cannot be deducted.



Fertilizer, lime and chemicals

(Amounts paid for materials to enrich, neutralize or condition land used in farming and the cost of application)

Commercial fertilizers, chemicals for weed control, chemicals for insect control, lime, gypsum

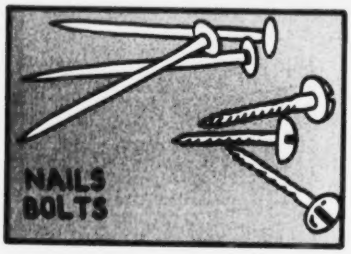
---

Machine hire

(Amount paid for hiring machinery to carry on the farming operation)

Custom harvesting, plowing, planting

Note: Some types of machine hire may be expensed as soil conservation expenses or must be included in the cost of building a capital asset.



Supplies

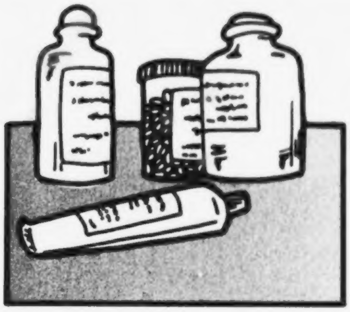
(Amount paid for any item with a useful life of less than one year and used in the farm business)

Small hand tools, v-belts, bolts, consumable supplies, items which would otherwise be a repair may be treated as a supply if the farmer or rancher buys a number of the items at one time in order to have the item available when needed

Breeding fees

(Amount paid for breeding of livestock)

Stud fees, embryo transplants, A.I. fees



Veterinary medicine

(Amounts paid for veterinarian services and livestock medicine)

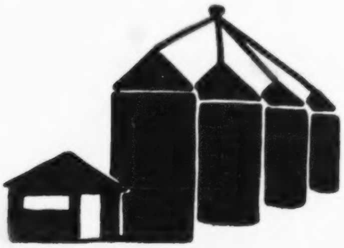
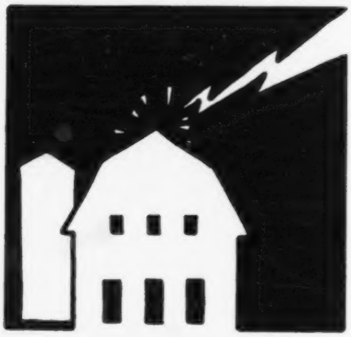
Antibiotics, vaccines, operations

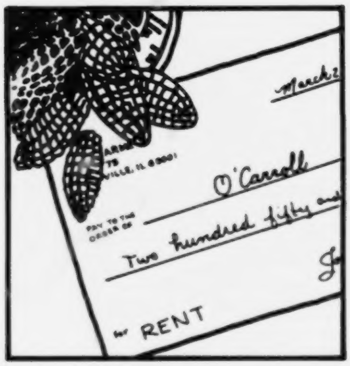
Fuel and oil

(Amount paid for fuel and oil used in the farm business)

Gasoline, diesel, grease, oil, irrigation fuel

Note: Fuel for automobile and home use is not deductible except to the extent used in the farm business.

	**Storage** (Amount paid for commercial storage of farm commodities)	Grain in elevator
	Taxes (Amounts paid for taxes incurred in the farm business) Note: State and federal income taxes and other personal taxes are not deductible as farm expenses.	Real estate and personal property taxes paid on farm business assets, social security taxes paid on hired labor, registration fees paid on farm vehicles
	**Insurance** (Premiums paid for insurance on assets used in the farm business)	Crop insurance, liability insurance, casualty insurance on farm equipment, insurance policies on farm employees
	Utilities (Percentage of amount paid that is attributable to farm business use)	Farm share of electricity, rural water, telephone

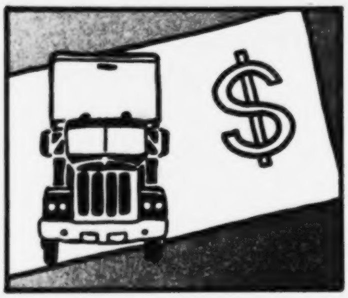


Cash rent

(Amounts paid for rent)

Note: Rent paid in crop shares is not deductible because the costs of raising the crops have been deducted as farm expenses.

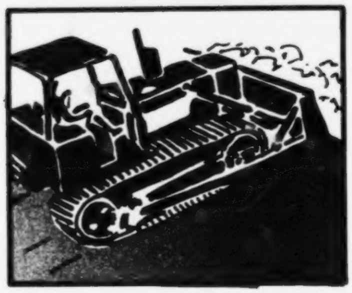
Crop land, machinery lease arrangements



Freight and trucking

(Amounts paid for transportation to market and for business travel and entertainment)

Trucking, farm business travel and entertainment such as annual farm organization meeting or farm machinery show



Conservation and land clearing

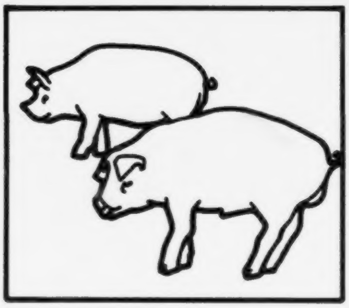
(Amounts paid for soil and water conservation on land used in farming)

Construction of waterways, farm ponds, terraces; clearing of trees; movement of earth such as leveling

Miscellaneous expenses

(Amounts paid for farm business expenses but not clearly defined under other categories)

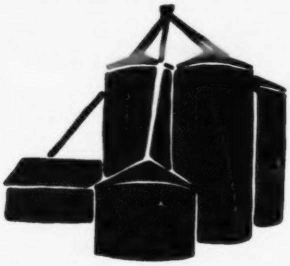
Bank service charges on farm account, farm magazine subscriptions, donations to agricultural organizations, agricultural education classes



Items purchased for resale

(Amounts paid for items to be resold at another time)

Livestock purchased in the fall to be sold next spring, hedging contracts



Capital purchases

(Amounts paid for purchase of capital assets)

Note: For income tax purposes there are special rules for capital purchases.

Breeding livestock, machinery and equipment, land, buildings and improvements

NONBUSINESS EXPENSES

Besides business expenses, the O'Carrolls post their nonbusiness expenses.

Nonbusiness expenses are those expenses which cannot be deducted as business expenses. Here are some nonbusiness expenses:

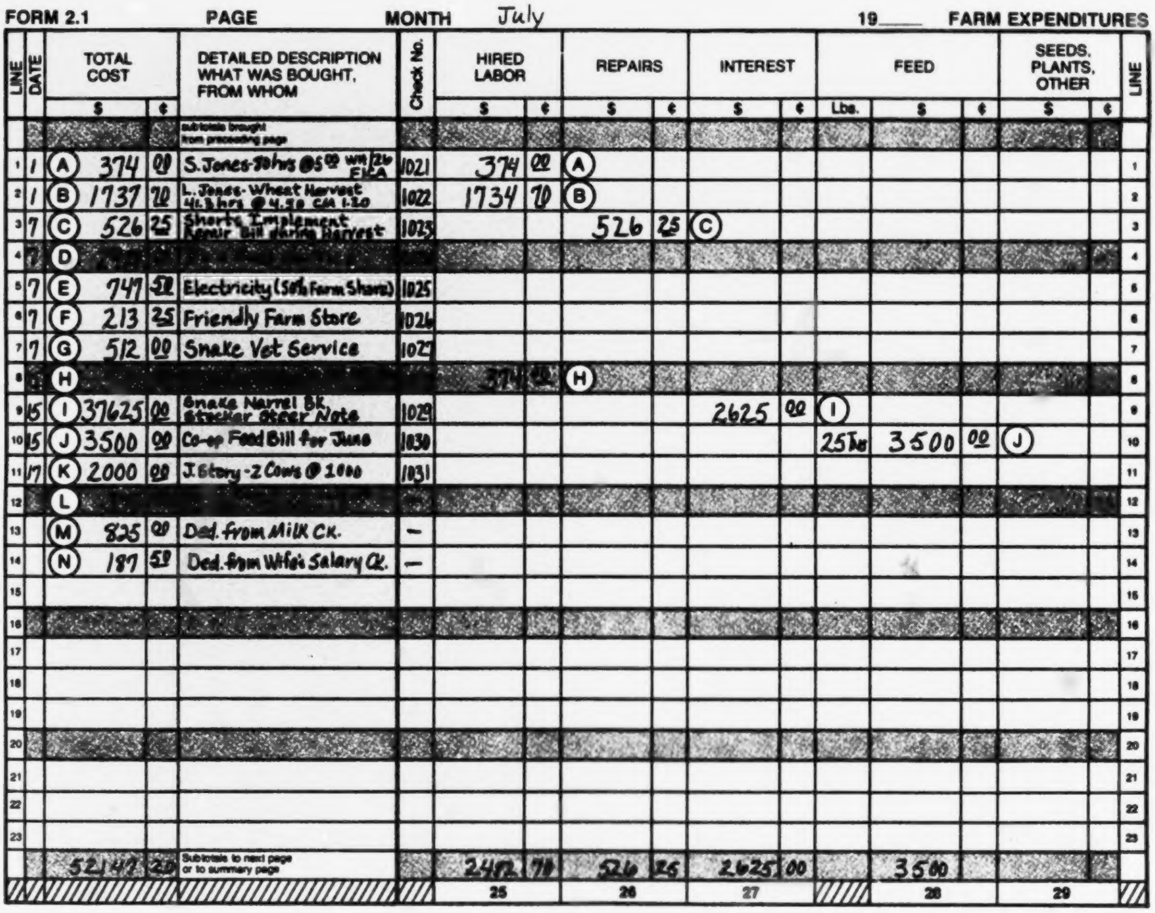
- Family living expenses such as groceries, utilities for the home, federal and state income taxes, itemized deductions, life insurance premiums, personal auto expenses, and household expenses (Fig. 23)
- Nonbusiness expenses such as investments and travel to a nonfarm job
- Gifts, fines, penalties, hobbies, and principal paid on debt (Fig. 24)

SUMMARY

The O'Carrolls record their inventory and their receipts. Now that John and Mary have some good definitions of what business expenses are, they can post them in their records. Here is what they did. You can see from their examples which expenses were posted in the records and how they are posted (Fig. 25, Fig, 26).

Fig. 23 — Living Expenses Are Not Deducted As Business Expenses

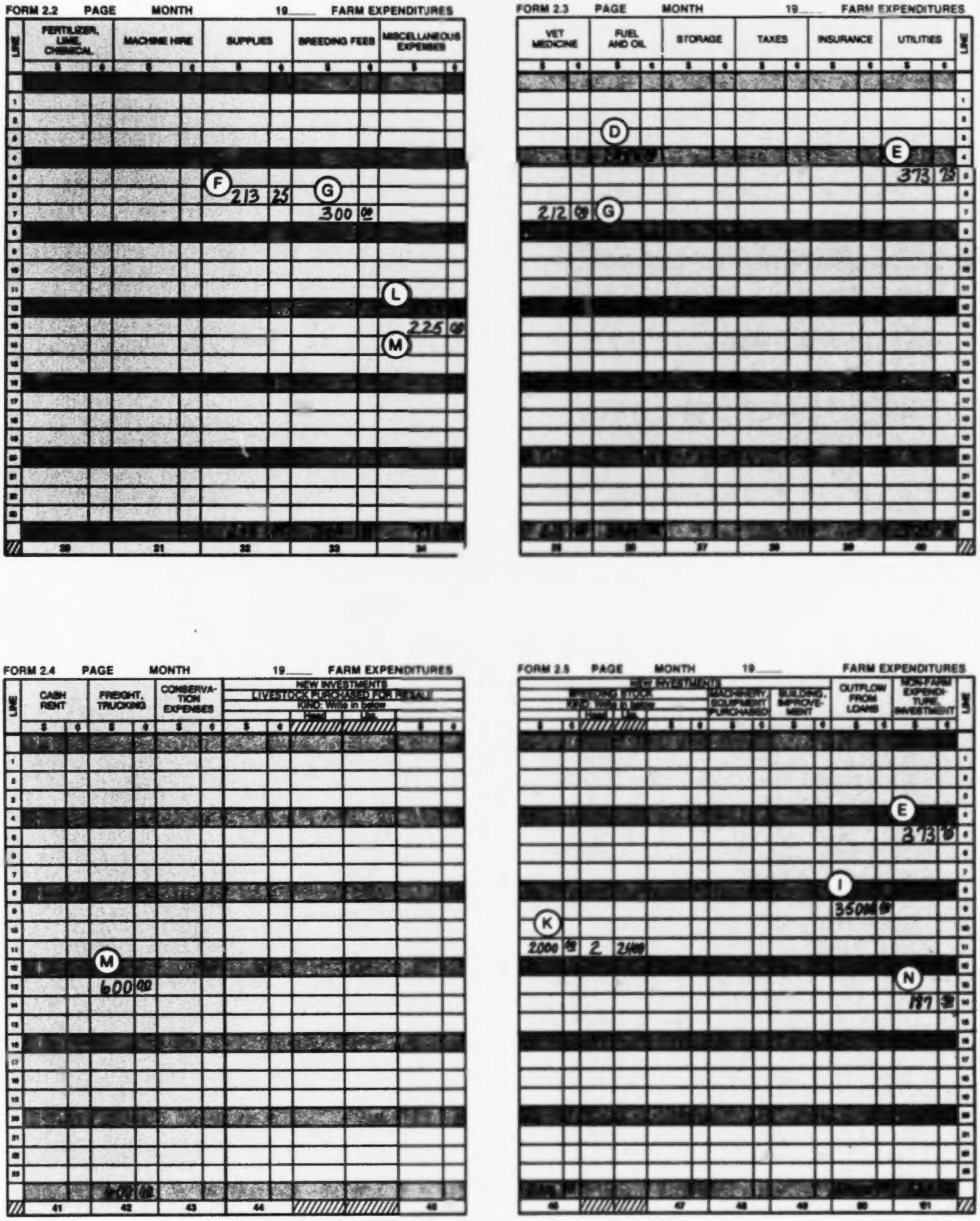
Fig. 24 — Hobbies Are Not Deductible As Business Expenses



FORM 2.1 PAGE MONTH July 19____ FARM EXPENDITURES

LINE	DATE	TOTAL COST $	TOTAL COST ¢	DETAILED DESCRIPTION WHAT WAS BOUGHT, FROM WHOM	Check No.	HIRED LABOR $	HIRED LABOR ¢	REPAIRS $	REPAIRS ¢	INTEREST $	INTEREST ¢	FEED Lbs.	FEED $	FEED ¢	SEEDS, PLANTS, OTHER $	SEEDS, PLANTS, OTHER ¢	LINE
				subtotals brought from preceeding page													
1	1	Ⓐ 374	00	S.Jones-50hrs @5^{00} wh/26 FICA	1021	374	00	Ⓐ									1
2	1	Ⓑ 1737	70	L.Jones-Wheat Harvest 41.3hrs @4.50 CM 1.30	1022	1734	70	Ⓑ									2
3	7	Ⓒ 526	25	Shorts Implement Repair Bill during Harvest	1023			526	25	Ⓒ							3
4	7	Ⓓ [redacted]	[redacted]	[redacted]	[redacted]												4
5	7	Ⓔ 747	52	Electricity (50% Farm Share)	1025												5
6	7	Ⓕ 213	25	Friendly Farm Store	1026												6
7	7	Ⓖ 512	00	Snake Vet Service	1027												7
8		Ⓗ [redacted]	[redacted]	[redacted]	[redacted]	374	00	Ⓗ									8
9	15	Ⓘ 37625	00	Snake Narrel Bk. Stocker Steer Note	1029					2625	00	Ⓘ					9
10	15	Ⓙ 3500	00	Co-op Feed Bill for June	1030							25Ton	3500	00	Ⓙ		10
11	17	Ⓚ 2000	00	J.Story-2 Cows @ 1000	1031												11
12		Ⓛ [redacted]	[redacted]	[redacted]	[redacted]												12
13		Ⓜ 825	00	Ded. from Milk Ck.	—												13
14		Ⓝ 187	58	Ded. from Wife's Salary Ck.	—												14
15																	15
16																	16
17																	17
18																	18
19																	19
20																	20
21																	21
22																	22
23																	23
		52147	20	Subtotals to next page or to summary page		2482	70	526	26	2625	00		3500				
						25		26		27			28		29		

Fig. 25 — Total Expenditures. These Entries Are Broken Down Into Detailed Listings In Fig. 26.



FORM 2.2 PAGE MONTH 19____ FARM EXPENDITURES

LINE	FERTILIZER, LIME, CHEMICAL $	¢	MACHINE HIRE $	¢	SUPPLIES $	¢	BREEDING FEES $	¢	MISCELLANEOUS EXPENSES $	¢
6					Ⓕ 213	25	Ⓖ			
7							300	00		
11									Ⓛ	
13									225	00
14									Ⓜ	
	30		31		32		33		34	

FORM 2.3 PAGE MONTH 19____ FARM EXPENDITURES

VET MEDICINE $	¢	FUEL AND OIL $	¢	STORAGE $	¢	TAXES $	¢	INSURANCE $	¢	UTILITIES $	¢	LINE
		Ⓓ										3
		[illegible]								Ⓔ		4
										373	[illegible]	5
212	00	Ⓖ										7
35		36		37		38		39		40		

FORM 2.4 PAGE MONTH 19____ FARM EXPENDITURES

LINE	CASH RENT $	¢	FREIGHT, TRUCKING $	¢	CONSERVATION EXPENSES $	¢	NEW INVESTMENTS LIVESTOCK PURCHASED FOR RESALE KIND: Write in below $	¢	Head	Lbs.	$	¢
12			Ⓜ									
13			600	00								
			600	00								
	41		42		43		44				45	

FORM 2.5 PAGE MONTH 19____ FARM EXPENDITURES

NEW INVESTMENTS BREEDING STOCK KIND: Write in below $	¢	Head	Lbs.	$	¢	MACHINERY/ EQUIPMENT PURCHASED $	¢	BUILDING, IMPROVE-MENT $	¢	OUTFLOW FROM LOANS $	¢	NON-FARM EXPENDI-TURE, INVESTMENT $	¢	LINE
												Ⓔ		4
												373	[illegible]	5
										Ⓘ				8
										3500	00			9
Ⓚ														10
2000	00	2	2400											11
												Ⓝ		13
												197	[illegible]	14
46				47		48		49		50		51		

Fig. 26 — Sample Forms For Recording Expenditures By Subject. Circled Letters Correspond To Entries In Fig. 25.

CASH FLOW SUMMARY

Next a record showing what cash comes in and what cash goes out is needed. It is called a cash flow summary.

A cash flow summary is a record of the cash inflows (dollars available) and cash outflows (dollars used) of the business for the past year (Fig. 27). After posting the monthly receipts and expenses, the O'Carrolls transfer the total to a Cash Flow Summary form (Fig. 28). They compare the cash flow summary to their cash flow projection to determine if the operation is staying within the projected cash flow budget.

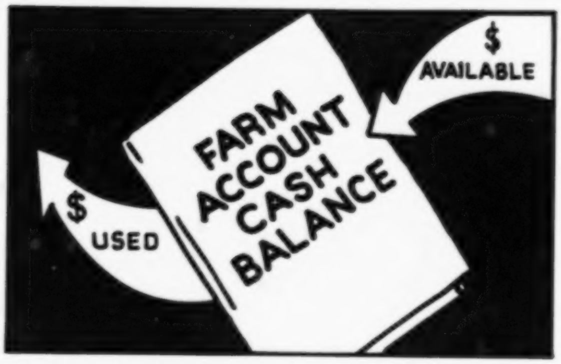


Fig. 27 — A Cash-Flow Summary Shows Dollars Available And Dollars Used

Here is the record that the O'Carrolls make for their cash flow in the first six months of the year. The figures came from their records of receipts and expenses. With all the figures on one summary sheet it is possible to see the trends and patterns in expenses and receipts. This helps them make better business decisions (Fig. 28).

OTHER RECORDS

The inventory, expenses, receipts, and summary cash flow are the main records needed. However, there are some other records that are useful in the O'Carrolls' farm record keeping system. They are records of:

- Credit
- Hired labor
- Nonfarm and family living
- Enterprise
- Supplemental

Here is a description of each of these records.

CREDIT RECORDS

Credit records are used to keep track of accounts receivable and accounts payable. Beginning of the year balances for each account should be recorded as part of the inventory process. As money is borrowed, or principal is paid, the credit record for each account should be brought up to date. Here are a few kinds of credit records:

- **Open accounts receivable** — Used for short-term loans and credit lines owed to the farm. For example, this happens when someone purchases hay on credit or a hired hand draws an advance on a salary.

- **Notes and mortgages receivable** — This is used for intermediate and long-term loans made by the farm. An example is a rancher that is carrying the financing on a hay baler that was sold to a neighbor.

- **Open account payable** — This is used for open accounts that are owed by the farm. Examples are a charge account at the local cooperative or a fuel bill at the gas station.

- **Credit lines and short-term, multipayment notes** — These are used for notes that are owed by the farm that are due within one year in several payments.

- **Intermediate and long-term, multipayment notes and mortgage record** — This is used for loans owed by the farm which are all or in part due after one year. These are machinery and land notes.

FORM 6.1 **CASH FLOW** **FINANCIAL PLAN OR SUMMARY**

	LINE	JAN.	FEB.	MAR.	APR.	MAY	JUNE	6-MONTH SUBTOTAL
RECEIPTS								
Crop Sales Corn	1	1,200	1,600				62,600	65,400
Hay	2	6,600						6,600
Beans	3	27,500	400					27,900
	4							
Government Payments	5	7,900	9,800				160	17,860
Custom Work	6							
Dividends, Refunds, Resales	7			125	900	1,400		2,425
Cash Rent, Other	8				1,100			1,100
Livestock Products (add columns 9-10)	10							
Misc. Income (add columns 11-12)	12	2,000						2,000
Non-Breeding Livestock Raised (add cols. 13-14)	14					21,600		21,600
OPERATING SALES TOTAL (add lines 1-14)	A	45,200	11,800	125	2,000	23,000	62,760	144,885
Livestock Purchd. for Resale Sales Tot. (add cols. 15-16)	16			5,000		27,000		32,000
Breeding Livestock Sales (add columns 17-18)	18		650					650
Machinery, Equipment, Building Sales	19							
CAPITAL SALES TOTAL (add lines 18-19)	B	-0-	650	-0-	-0-	-0-	-0-	650
TOTAL FARM RECEIPTS (add lines A plus 16 plus B)	C	45,200	12,450	5,125	2,000	50,000	62,760	177,535
INFLOW FROM LOANS	20		50,200	85,000	260,000		81,500	476,700
NON-FARM RECEIPTS	21	500	2,200	4,900	3,800	1,500		12,900
TOTAL DOLLARS AVAILABLE (add lines C plus 20 plus 21)	D	45,700	64,850	95,025	265,800	51,500	144,260	667,135
EXPENDITURES								
Hired Labor	25	1,800	1,500	2,100	2,500	2,300	2,100	12,300
Repairs	26	1,450	1,600	150	1,400	800	1,900	7,300
Interest	27	3,400	12,000	10,000	1,100	600	9,000	36,100
Feed	28		300	450		100		850
Seed, Plants, Other	29	200						200
Fertilizer, Lime, Chemicals	30	300	5,000	12,500		1,300		19,100
Machine Hire	31		600	300		1,050	18,200	20,150
Supplies	32	2,700	2,440	908	1,025	4,100	1,500	12,673
Breeding Fees	33							—
Miscellaneous Expenses	34	450	200	300	500	25	275	1,750
Vet. Medicine	35		25		150	85	1,000	1,260
Fuel and Oil	36	50		10,300		325		10,675
Storage	37							—
Taxes	38	925		700		300		1,925
Insurance	39	865	70	85	400	120	290	1,830
Utilities	40	400	500	800	500	400	300	2,900
Cash Rent	41	600	5,750		1,300	6,900	2,000	16,550
Freight, Trucking	42	140	100	300		20		560
Conservation Expense	43					450		450
OPERATING EXPEND. TOTAL (add lines 25-43)	E	13,280	30,085	38,893	8,875	18,875	36,565	146,573
Livestock Purchd. for Resale Tot. (add cols. 44-45)	45					2,700		2,700
Breeding Stock Purchases Beef	46	650		74,050				74,700
	47							
Machinery and Equipment Purchased	48			9,300		5,300	3,250	17,850
Land and Building Improvement	49					2,100		2,100
CAPITAL EXPENSES TOTAL (add lines 46-49)	F	650	-0-	83,350	-0-	7,400	3,250	94,650
TOTAL FARM EXPENSES (add lines E plus 45 plus F)	G	13,930	30,085	122,243	8,875	28,975	39,815	243,923
Outflow From Loans	50	18,500	42,000	216,000			140,000	416,500
Non-Farm Expenses & Investments	51							
Family Living	FL	1,750	3,500	1,500	1,700	2,100	1,200	11,750
TOTAL DOLLARS USED (add lines G thru FL)	H	34,180	75,585	339,743	10,575	31,075	181,015	672,173
Cash Difference for Month (lines D minus H)	I	11,520	<10,735>	<244,718>	255,225	20,425	<36,755>	< 5,038>
Cash Balance Beginning of Month (line K last month)	J	7,770	19,290	8,555	<236,163>	19,062	39,487	2,732
Cash Balance End of Month (add lines I — J)	K	19,290	8,555	<236,163>	19,062	39,487	2,732	—
		JAN.	FEB.	MAR.	APR.	MAY	JUNE	6 MONTH SUBTOTAL

Fig. 28 — The Cash-Flow Summary For The O'Carrolls

HIRED LABOR RECORDS

Labor records for hired employees (Fig. 29) are important for tax, incentive plans, and management. Income taxes and social security (FICA) may have to be withheld and unemployment taxes (FUTA) paid on employees wages. Incentive plans provide rewards for extra work. Labor records provide a basis for determining rewards. Hired labor records help determine the real contribution of labor to an enterprise.

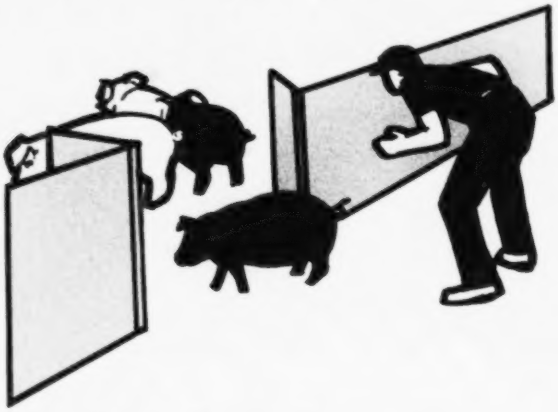
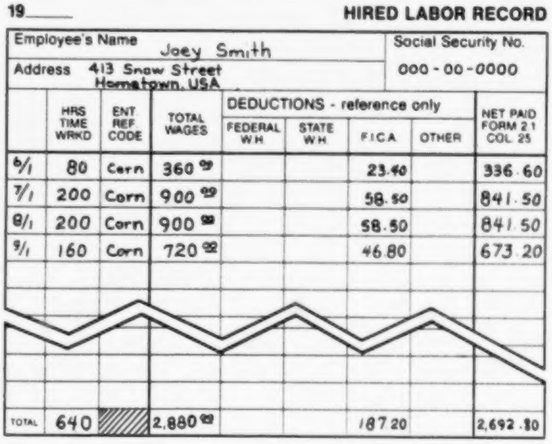


Fig. 29 — Labor Records Are Kept on Hired Employees

Here is the O'Carrolls' record of hired labor:



19____ **HIRED LABOR RECORD**

Employee's Name Joey Smith						Social Security No. 000 - 00 - 0000		
Address 413 Snow Street Hometown, USA								
	HRS TIME WRKD	ENT. REF. CODE	TOTAL WAGES	DEDUCTIONS - reference only				NET PAID FORM 2.1 COL. 25
				FEDERAL W.H.	STATE W.H.	F.I.C.A.	OTHER	
6/1	80	Corn	360^{00}			23.40		336.60
7/1	200	Corn	900^{00}			58.50		841.50
8/1	200	Corn	900^{00}			58.50		841.50
9/1	160	Corn	720^{00}			46.80		673.20
TOTAL	640	▨	2,880^{00}			187.20		2,692.80

FAMILY LIVING RECORDS

Records of family living expenses (Fig. 30) are another of the "other records" that the O'Carrolls find useful.

There are four good reasons to keep family living records:

- They help identify family living receipts and expenses, such as off-farm wages, groceries, utilities for the home, and itemized deductions (medical expenses, personal taxes, personal interest paid, and contributions)
- They assist the farmer or rancher in accounting for income and expenses that are not listed in the farm records
- They help develop future family living budgets
- They help identify nonfarm business incomes and expenses

Fig. 30 — Family Living Expenses Should Be Recorded

ENTERPRISE RECORDS

The O'Carrolls have heard about enterprise accounting, and they wonder what it is. They find that this includes accounting records, farm receipts, and expenses that are related directly to each specific farm enterprise. For example, they are used to keep track of the hog operation (Fig. 31), and the corn growing separately.

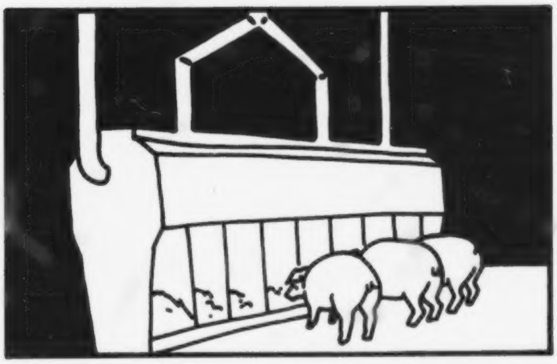


Fig. 31 — Enterprise Records And Accounting Are For Specific Farm Operations Such As Hogs

Enterprise accounting can pinpoint the level of and the factors that affect profitability. Records may show that feeding corn is more profitable than selling corn. To prove this, the O'Carrolls keep a separate set of inventory, expenses, receipts, and summary cash flow records for that certain enterprise.

Enterprise Categories

There are three general categories of enterprise records and analysis:

- **Major enterprises** which are a large portion of the farm business income.

- **Minor enterprises** which contribute a smaller portion of farm business income. Minor enterprises usually have little effect on the management decisions of the farm business.

- **Overhead enterprise** is used to record income and expenses that cannot be attributed directly to an enterprise at the time incurred. At the end of the accounting period, the items in the overhead enterprise account should be allocated to a major or minor enterprise for analysis and management purposes. Typical items in the overhead enterprise include: patronage refund from local cooperative, pickup fuel expenses for running farm errands, bulk fertilizer which was applied to several enterprises, farm supplies, and shop consumable supplies.

Capital sales and purchases, inflow from loans (money borrowed) and outflow to loans (principal paid), and nonfarm receipts and expenses should not be allocated to farm enterprises.

Noncash expenses, such as depreciation, unpaid operator and family labor, and opportunity costs, should be allocated at the end of the accounting period. These expenses may be allocated on enterprise percentage of total gross income, total number of acres, or total head of livestock. There is no one best method.

Internal transfers should be allocated as they occur. An internal transfer is the movement of some item from one enterprise to another enterprise. An example is the feeding of raised hay from the hay enterprise to cows in the cattle enterprise. By doing this, the farmer or rancher can analyze whether or not to sell the hay or feed it to the cows. The hay enterprise would be credited with a noncash sale of hay and the cattle enterprise would be charged with a noncash expense for hay for feed.

SUPPLEMENTAL RECORDS

Supplemental records supply additional information which helps provide a more complete record system. Supplemental records provide:

- A record of yields, production, and physical performance

- A record of production practices and weather conditions

- A record of materials and resources used

Examples of supplemental record items:

- Home used products

- Breeding

- Animal death loss

- Livestock feeding

- Crop and feed balance

- Livestock and crop production summaries

- Labor

- Field records

SUMMARY

There are two categories of records:

- Financial
- Physical

There are three levels of record keeping:

- Income tax
- Income tax plus farm business analysis
- Complete farm business analysis

There are two accounting systems:

- Single-entry
- Double-entry

There are two ways to report farm income and expenses:

- Cash method
- Accrual method

There are definite steps to keeping good records:

1. Inventory at the same time each year
2. Get depreciation schedules
3. Record receipts, and expenses
4. Summarize expenses and receipts in a summary cash flow
5. Figure depreciation at the end of the year
6. Analyze the records

Items to inventory must be clearly defined. Formulas for putting value on inventory items must be clear.

Records must be posted in the correct place. Clear definitions of each subcategory of income or expense must be made.

Once you have all these records, you can use them. What do you do with them? Figure future budgets, plan growth, find where money is spent wisely and where poorly.

Other records that help are:

- Nonbusiness expenses
- Cash-flow summary
- Credit records
- Hired labor records
- Family living records
- Enterprise records
- Supplemental records

All make a farm and ranch record system a tool that can be used to help **manage your business.**

FINANCIAL ANALYSIS

CHAPTER 3

INTRODUCTION

The success of an agribusiness depends upon the manager's ability to analyze the financial situation of the operation. For this reason, financial statements are an integral part of farm and ranch management. They are used by the manager to help monitor the financial progress of the business and to compare it with past performances.

Because of the large capital investments that are required, credit and financing have become a major part of farming and ranching. Few agribusiness managers can afford to operate on a cash basis. Without complete financial statements, credit is difficult to obtain.

In this Chapter, we will look at the types of financial statements, how they are put together, and how they are used.

THE FIRST LOAN

Rod Young farmed with his father for three years until his father died. Today he assumes full management of Young Farms. He knows that he needs a loan to continue the operations. Rod takes a list of his expected receipts and last year's income tax return to a local lending institution loan officer, Mr. Hatchell.

Mr. Hatchell tells Rod that the institution is willing to loan funds if Young Farms can show a favorable financial condition. Mr. Hatchell, however, needs accurate and detailed financial records. Rod has little experience with financial statements, such as cash flows and budgets. He has no experience analyzing the farm's financial condition. This is Rod's first loan request.

Mr. Hatchell tells Rod that for him to become a good farm manager with the ability to analyze his finances, he must be able to identify the various types of assets and liabilities. He must also know the components of income statements. He must be able to understand and use the ratios that are associated with net worth and income statements, and to know when and where to use them.

Mr. Hatchell tells Rod that if he understands the net worth and income statements, then he will have good knowledge regarding the assessment of the financial condition of the farm business. Rod then asks Mr. Hatchell if he can explain how to prepare and use these financial analysis tools.

ASSESSING THE FINANCIAL CONDITION OF THE BUSINESS

Mr. Hatchell explains that assessing a farm's financial condition is like giving a periodic physical checkup to someone (Fig. 1). A doctor examines your body and measures your physical condition. A financial analyst or manager examines financial statements and measures cash flow, assets, and liabilities, in order to determine financial health. The critical financial statements are the net worth statement, income statement (profit and loss statement), and cash flow statements. Rod was eager to provide the information that Mr. Hatchell needs to analyze Young Farms because he realizes that this analysis also will help him run the farm more efficiently.

Fig. 1 — Like A Physical Checkup The Analysis Of A Farm Business Helps Determine Its Condition

NET WORTH STATEMENT

One of the first pieces of information that Rod needs is a net worth statement (also referred to as a balance sheet). The net worth statement is a "snapshot" of a financial situation that lists assets, liabilities, and net worth (Fig. 2). The accounting equation states that

Net Worth = Assets - Liabilities.

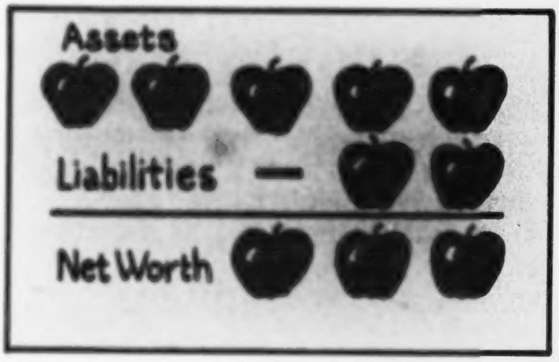


Fig. 2 — The Net Worth Statement Shows A Summary Of A Financial Situation

Mr. Hatchell describes each of the three parts of a net worth statement to Rod:

- Assets
- Liabilities
- Net worth

ASSETS

Mr. Hatchell explains that assets are items that have a market value. They are separated into three categories:

- Current assets
- Intermediate assets
- Fixed (or long-term assets)

Current Assets

Current assets are cash or other assets which can be converted to cash through the normal operations of the business during the year. Current assets are:

- Checking and/or savings accounts
- Receivables (what is owed you)
- Inventory held for sale (Fig. 3)
- Other near-cash items are securities, stocks and bonds, and the cash value of life insurance

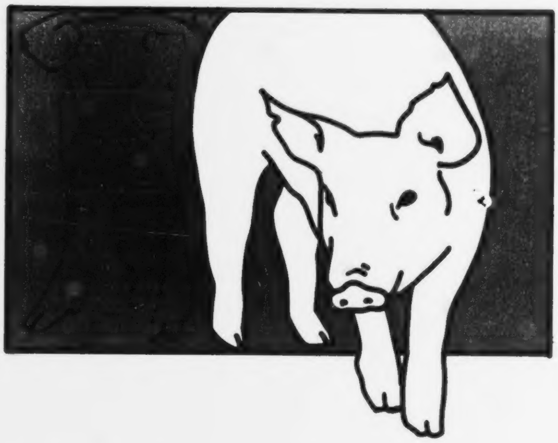


Fig. 3 — A Current Asset Includes Inventory Held For Sale

Intermediate Assets

Intermediate assets are resources or production items with a useful life of 1 to 10 years. Most of these assets are used to support production (Fig. 4). They are used in the farm production process. Assets which are expected to be sold or converted into cash within the year should not be included. Examples of intermediate assets are equipment, machinery, and breeding livestock.

Fig. 4 — An Intermediate Asset Includes Machinery

Intermediate assets are generally depreciable. Market value may be more or less than book value (value left to depreciate). This difference can result from rapid depreciation because of tax advantages and of rapid inflation or deflation. For this reason, you may want to use a financial statement that provides for both the book value (original cost minus depreciation) and market value estimates.

Fixed Assets

Fixed assets are also called long-term assets. They include permanent (Fig. 5) items such as real estate and improvements on buildings. Although land and improvements are frequently valued as a unit, separate values give a clearer picture of the business.

Fig. 5 — Fixed Assets Include Buildings And Land

LIABILITIES

The second part of a net worth statement is liabilities. Liabilities are all the debt obligations of the business. There are three categories of liabilities:

- Current liabilities
- Intermediate liabilities
- Long-term liabilities

Current Liabilities

Debts due within the operating year, normally a 12-month period, are called current liabilities. These include notes and accounts payable (Fig. 6), rents, taxes, interest, plus the principal payments due on intermediate or long-term debt within the next 12 months.

Fig. 6 — Current Liabilities Include Feed Bills

Intermediate Liabilities

Nonreal estate debt that corresponds to intermediate assets is intermediate liability. Loan terms are normally for a period of 12 months or more, but less than 10 years. Examples include loans for:

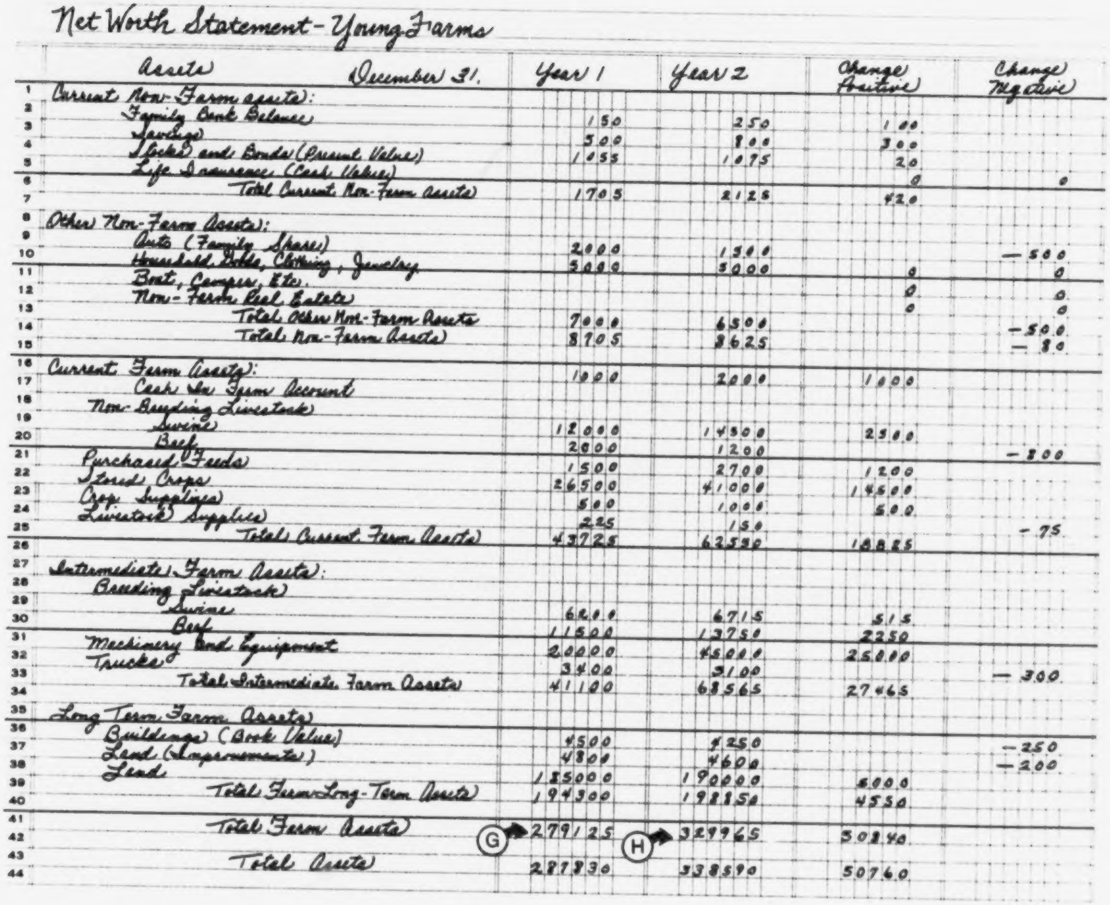
- Improvements to real estate
- Equipment purchases (Fig. 7)
- Breeding livestock and dairy stock
- Capital requirements for major adjustments in farm operation

Fig. 7 — Intermediate Liabilities Include Equipment Loans

Long-Term Liabilities

Mortgages and land contracts on real estate minus principal due within 12 months is long-term liability (Fig. 8). Terms or conditions of mortgages and land contracts should be examined closely to determine the effect that each arrangement has on the expected credit program.

Fig. 8 — Long-Term Liabilities Include Mortgages



Net Worth Statement - Young Farms

	Assets December 31.	Year 1	Year 2	Change Positive	Change Negative
1	Current Non-Farm assets):				
3	Family Bank Balance	150	250	100	
4	Savings	500	800	300	
5	Stocks and Bonds (Present Value)	1055	1075	20	
6	Life Insurance (Cash Value)			0	0
7	Total Current Non-Farm assets	1705	2125	420	
8	Other Non-Farm Assets):				
10	Auto (Family Share)	2000	1500		— 500
11	Household Goods, Clothing, Jewelry	5000	5000	0	0
12	Boat, Camper, Etc.			0	0
13	Non-Farm Real Estate			0	0
14	Total Other Non-Farm Assets	7000	6500		—500
15	Total Non-Farm Assets	8705	8625		— 80
16	Current Farm Assets):				
17	Cash In Farm Account	1000	2000	1000	
18	Non-Breeding Livestock				
20	Swine	12000	14500	2500	
21	Beef	2000	1200		— 800
22	Purchased Feeds	1500	2700	1200	
23	Stored Crops	26500	41000	14500	
24	Crop Supplies	500	1000	500	
25	Livestock Supplies	225	150		- 75
26	Total Current Farm Assets	43725	62550	18825	
27	Intermediate Farm Assets):				
28	Breeding Livestock				
30	Swine	6200	6715	515	
31	Beef	11500	13750	2250	
32	Machinery and Equipment	20000	45000	25000	
33	Trucks	3400	3100		— 300
34	Total Intermediate Farm Assets	41100	68565	27465	
35	Long Term Farm Assets				
37	Buildings (Book Value)	4500	4250		—250
38	Land (Improvements)	4800	4600		—200
39	Land	185000	190000	5000	
40	Total Farm Long-Term Assets	194300	198850	4550	
42	Total Farm Assets	Ⓖ 279125	Ⓗ 329965	50840	
44	Total Assets	287830	338590	50760	

Fig. 9 — Financial Statement Chart — Left Side

NET WORTH

Net worth, the third component in a net worth statement, is total liabilities subtracted from total assets. Net worth is also called an owner's equity. If Rod were to sell all of his assets and pay off his liabilities, net worth is the amount of money that he could put in his pocket (before taxes). Net worth is Rod's equity in the farm or his claim against the total assets of Young Farms.

Rod learns a lot for one day. Mr. Hatchell suggests that Rod go home and try his hand at constructing a net worth statement for Young Farms (Fig. 9).

NOTE: For reference, some key numbers and items are marked with circled numbers and letters. These key numbers and items are referred to throughout the text.

In order to find total farm assets;
Line 25 + Line 33 + Line 39 = Line 41 (G)
Line 6 + Line 13 = Line 14

Most farm and ranch businesses are organized as sole proprietorships or family owned corporations. Their net worth statement may include agricultural and personal assets and liabilities as separate categories. It is best to separate personal and business items as shown in Fig. 9. Financial progress of the agricultural operation must be evaluated separately from personal interest. Sometimes personal experiences such as marriages, divorces, deaths, college and off-farm employment distort asset and liability figures.

Net Worth Statement - Young Farms

	Liabilities December 31,	Year 1	Year 2	Change Positive	Change Negative
1	Current Non-Farm Liabilities:				
2	Charge accounts				
3	Montgomery Ward	100	40		−60
4	MasterCard	150	75		−75
5	Notes: (portion due next year)			0	0
6	Mortgages (portion due next year)			0	0
7	Accrued interest on above	25	10		−15
8	Total Non-Farm Current Liabilities	275	125		−150
9					
10	Other Non-Farm Liabilities:				
11	Notes (portion due after next year)			0	0
12	Mortgages (portion due after next year)			0	0
13	Total Non-Farm Liabilities	275	125		−150
14	Non-Farm Net Worth	8430	8500	70	
15					
16	Current Farm Liabilities:				
17	Accounts Payable				
18	Fertilizer, Fuel, Feed, etc.	5000	1000		−4000
19	Other	2500	500		−2000
20	Portion of interest and long-term debt due next year				
21	F.D.A. I.T. note principle				
22	FLB L.T. Mortgage Principle	5696	4539		−1157
23	Accrued Liabilities (Taxes, rent, interest)	4611	5165	554	
24	Interest on I.T. & L.T. debt	518	3150	2637	
25	Taxes	1850	1900	50	
26	Total Farm Current Liabilities	20170	16254		−3916
27					
28	Intermediate Farm Liabilities:				
29	Breeding Stock			0	0
30	Machinery and Equipment	5700	25461	19761	
31	Total Farm Intermediate Liabilities	5700	25461	19761	
32					
33	Long Term Liabilities				
34	Portion of long term debt due after next year				
35	FLB Mortgage Balance	128952	124341		−4611
36					
37	Total Long-Term Farm Liabilities	128952	124341		−4611
38					
39	Total Farm Liabilities	154922	166036	11234	
40					
41	Farm Net Worth	① 124303	169909 ②	39606	
42					
43	Total Liabilities	155097	166181	11084	
44					
45	Total Net Worth	132733	172409	39676	
46					
47	Total Liabilities plus Net Worth	287830	338590	50760	
48					

Fig. 9 — Financial Statement Chart — Right Side

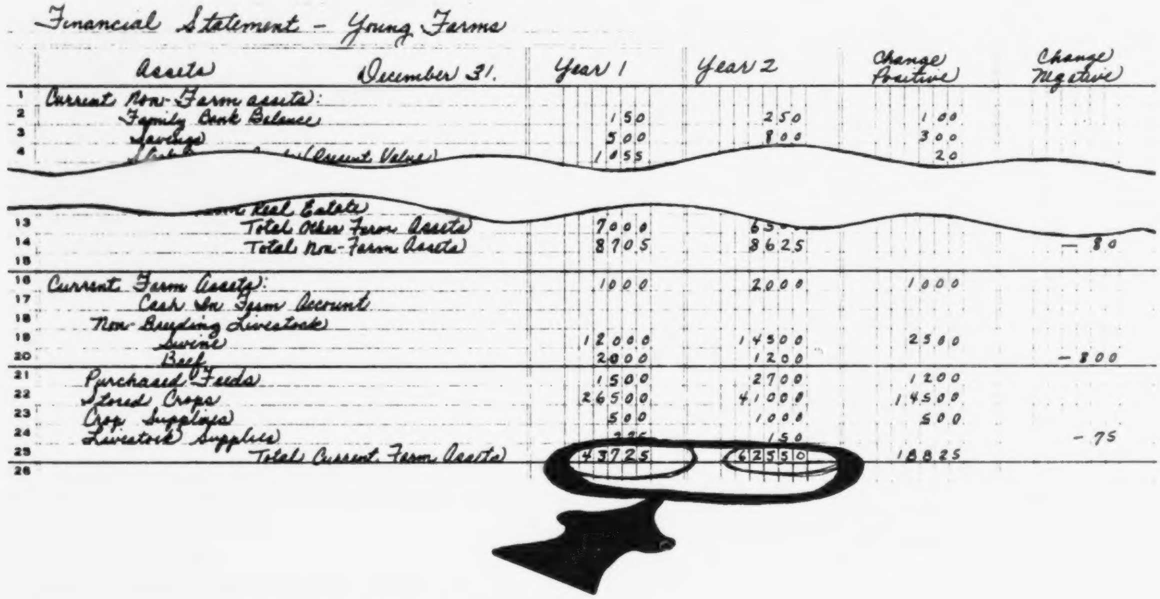
KINDS OF FINANCIAL ANALYSIS

There are three kinds of analysis to use on net worth statements:

- Comparative analysis
- Projected analysis
- Ratio analysis

Rod Young soon finds that if he keeps net worth statements then he can look at them and compare figures over the months and years. This will give him a clear picture of whether his farm equity is growing or shrinking.

Measuring and analyzing these trends is called **comparative analysis** (Fig. 10). It is important to compare figures from the same dates each year.



Financial Statement - Young Farms

	Assets December 31.	Year 1	Year 2	Change Positive	Change Negative
1	Current Non-Farm assets:				
2	Family Bank Balance	150	250	100	
3	Savings	500	800	300	
4	(Current Value)	1055		20	
	Real Estate				
13	Total Other Farm Assets	7000	65		
14	Total Non-Farm Assets	8705	8625		– 80
15					
16	Current Farm Assets:	1000	2000	1000	
17	Cash In Farm Account				
18	Non-Breeding Livestock				
19	Swine	12000	14500	2500	
20	Beef	2000	1200		– 800
21	Purchased Feeds	1500	2700	1200	
22	Stored Crops	26500	41000	14500	
23	Crop Supplies	500	1000	500	
24	Livestock Supplies	[illegible]	150		– 75
25	Total Current Farm Assets	43725	62550	18825	
26					

Fig. 10 — Financial Statement Chart — Assets

Projected analysis is a tool that Rod can use to estimate future changes in his equity (Fig. 11). Projected net worth statement analysis consists of making balance sheets for the future for expected farm situations and analyzing them to see probable trends. Projected net worth statements are usually made when cash flow statements are made (cash flow will be discussed in another chapter). The reason for doing the two at the same time is that the projected cash flow statement is needed to estimate cash and debt. The projected cash flow also reflects product sales and purchases needed to project ending inventories.

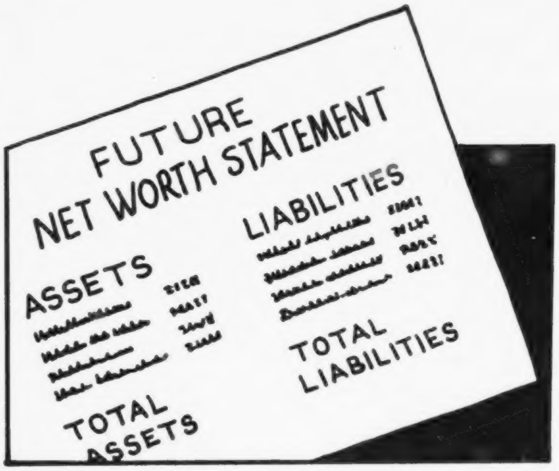


Fig. 11 — Projected Analysis Is Used To Estimate Future Financial Conditions

Rod finds that he can use a projected net worth statement in order to look into the future of his farm. The projected net worth statement is a very useful tool.

Ratio analysis is a tool that Rod can use to measure the financial condition of his farm against other farms (Fig. 12). Ratios which show strength or weakness are not clearly defined for farming or ranching. Rod finds that comparing his financial figures to those of others is not easy. What is good for one business may not be for another. However, properly used, the figures of other farm businesses are very good bench marks for Rod's analysis of his own farm.

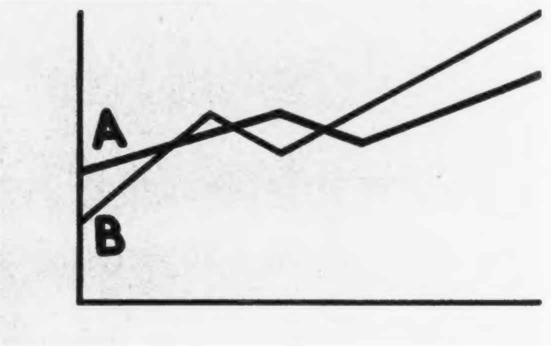


Fig. 12 — Ratio Analysis Measures Financial Condition Compared To Other Farms

WHAT TO LOOK FOR IN NET WORTH STATEMENTS

A net worth statement shows:

- Liquidity (the ability to convert to cash).
- Solvency (the ability to pay debts).
- Equity (the owner's share of the business).

Let's discuss each of the three in-depth:

LIQUIDITY

Rod learns that liquidity is the ability of a business to make enough cash to pay bills without disrupting business. One of the best measures of liquidity is the **current ratio.** The current ratio is whether current assets are greater than current liabilities (Fig. 13). Look at Figure 14 for the current ratios of Young Farms for the past four years. In year 4 Young Farms had $3.95 worth of current assets (A) for every $1.00 of current liabilities. Next, look at the intermediate ratio (B) (Fig. 14).

The **intermediate ratio** is the intermediate liquidity of the business and the current ratio is the short run liquidity. The intermediate ratio for Young Farms in year 4 is 3.29:1. This means that there is $3.29 worth of intermediate and current assets for every $1.00 of intermediate and current liabilities payable at the time (Fig. 14).

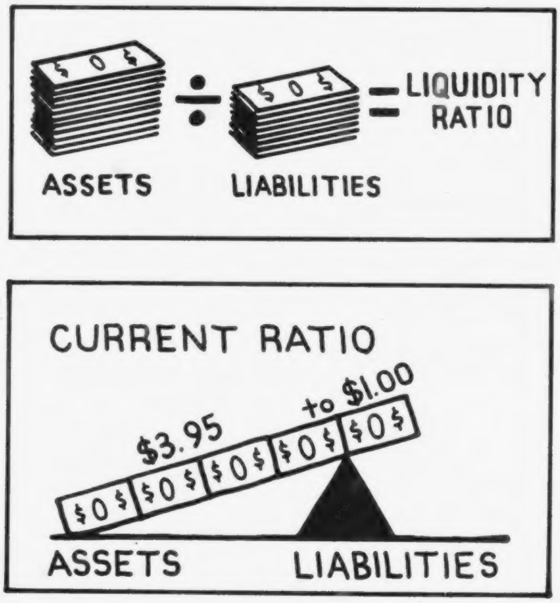


Fig. 13 — A Measure Of Liquidity Is The Ratio of Assets to Liabilities

Net Worth Ratios for Young Farms

Memo	Year 1	Year 2	Year 3	Year 4
Current ratio = $\frac{\text{Current assets}}{\text{current liabilities}}$ =	5.01	4.69	2.22	Ⓐ 3.95
Intermediate ratio = $\frac{\text{Current + intermediate assets}}{\text{current + intermediate liabilities}}$ =	4.21	4.83	3.58	Ⓑ 3.29
Net Capital ratio = $\frac{\text{Total assets}}{\text{Total liabilities}}$ =	2.03	2.15	1.86	Ⓒ 2.04
Debt to Equity ratio = $\frac{\text{Total liabilities}}{\text{networth (owners equity)}}$ =	0.97	0.87	1.17	Ⓓ 0.96

Fig. 14 — Ratios For Young Farms

SOLVENCY

A business is solvent if total assets exceed total liabilities (Fig. 15). Measures of solvency show the amount that would be left after all assets are converted to cash and all debts paid. Rod finds two measures of solvency:

- Net capital ratio
- Debt to equity ratio

The **net capital ratio** shows whether or not the total assets are adequate to cover total liabilities. This measure of solvency is total assets divided by total liabilities. Refer again to Fig. 14. See the net capital ratio (C) value for Young Farms. In year 4 there is $2.04 of total assets to cover every $1.00 of liabilities.

Fig. 15 — Solvency Exists When Total Assets Exceed Total Liabilities

EQUITY

The **debt-equity ratio** (also called debt-to-net worth) is another measure of solvency. It shows the relationship between owned and borrowed capital (calculated by dividing total liabilities by net worth) (D). Lenders are interested in this ratio because they usually prefer to provide loans which are equal to less than 50 percent of assets. Lenders prefer a debt-equity ratio of less than one. This shows that the owner's net worth or contribution is more than the borrowed funds.

What constitutes a safe ratio depends on farm profit. Be careful if your farm shows a declining debt-equity ratio over a period of time. If this happens look for production problems, nonproductive enterprises, or too many expenditures.

Look at the ratio of debt-equity for Young Farms (Fig. 14). In year 4 borrowed capital was equal to 96 percent of Rod's equity in the farm. Look at the trend in the relationship between assets and debts of Young Farms (Fig. 16).

Young Farms seems to be liquid and solvent. However, there is some financial deterioration over the past four years. This could be a signal of some production inefficiencies. Keeping good records will let Rod see trends and make adjustments.

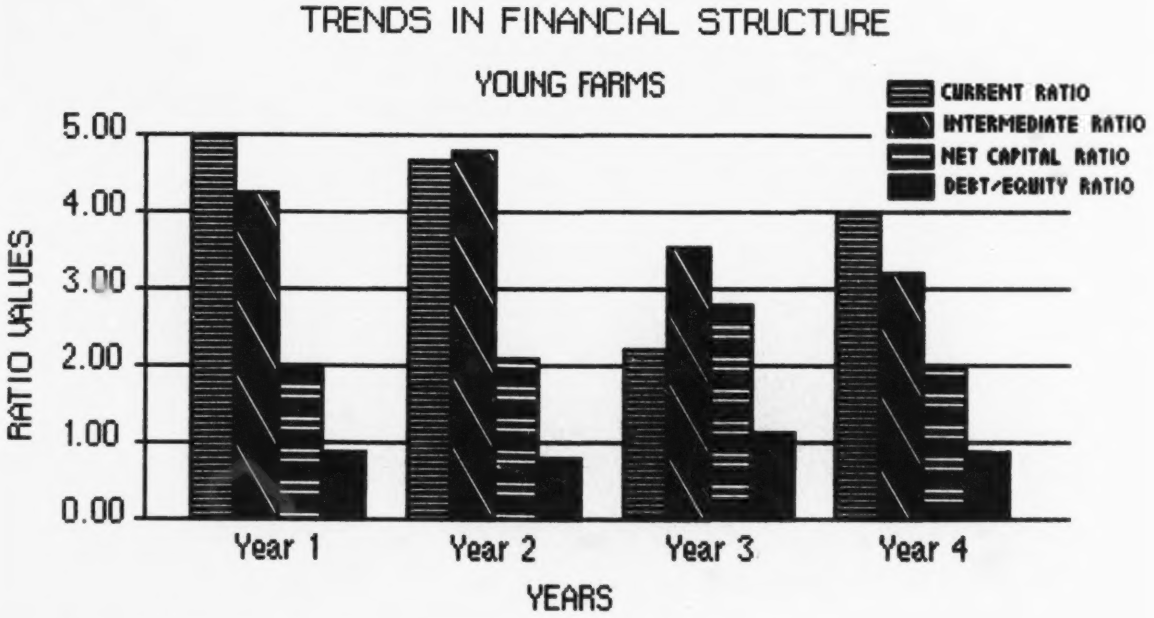


Fig. 16 — Trends Between Assets And Debts

INCOME STATEMENT

After another visit to Mr. Hatchell, Rod Young realizes that the analysis of the net worth statement provides a measure of the financial condition for one point in time over a series of years. It indirectly reflects the profitability of the farm business. Mr. Hatchell points out to Rod that if he wants to evaluate or analyze the profitability of the farm business then he should develop an income statement.

An income statement is sometimes called a profit and loss statement. From Mr. Hatchell's counsel, Rod realizes that he must list his receipts and his expenses. After he subtracts the expenses from the receipts, he will get an income or loss figure (Fig. 17).

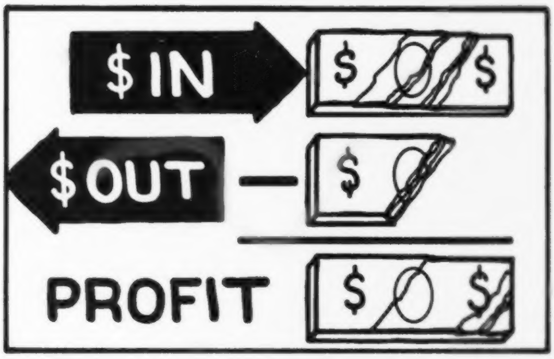


Fig. 17 — An Income Statement Shows Profit Or Loss

Here is the formula for determining net cash income:

Net Cash Income = Gross Receipts - Total Expenses.

Here are some more facts that Rod finds concerning income statements.

RECEIPTS

Receipts are money received from the sale of crops, livestock, and livestock products during the year (Fig. 18). Receipts should also include government payments and miscellaneous farm sources of income.

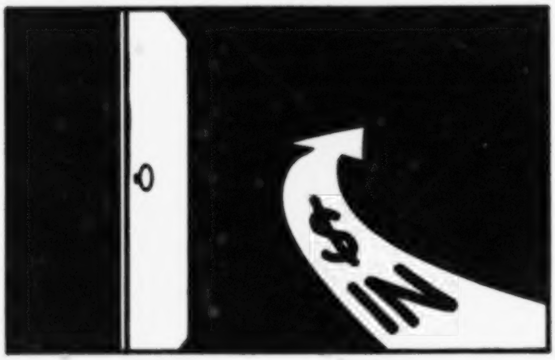


Fig. 18 — Receipts Are Money Received From Various Sources

EXPENSES

Rod finds that the expense items are money paid out to operate the business (Fig. 19). Purchases of seed, feed, and fertilizer are examples. Cash outflow for items such as taxes, insurance, and interest on intermediate and long term debt are classified as fixed expenses. These fixed expenses are outflows which occur whether a product is grown or not. Interest paid on operating loans (money borrowed for production purposes) would be an operating expense since it is used to run the farm. Operating and fixed expenses for Young Farms are listed in Figure 20.

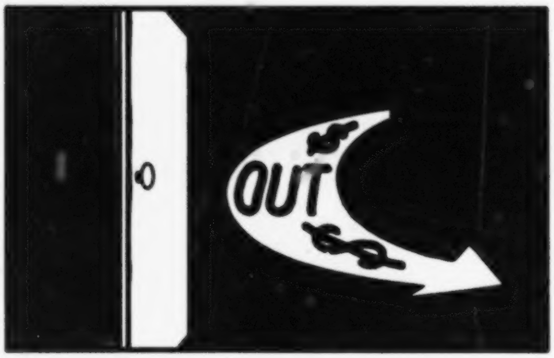
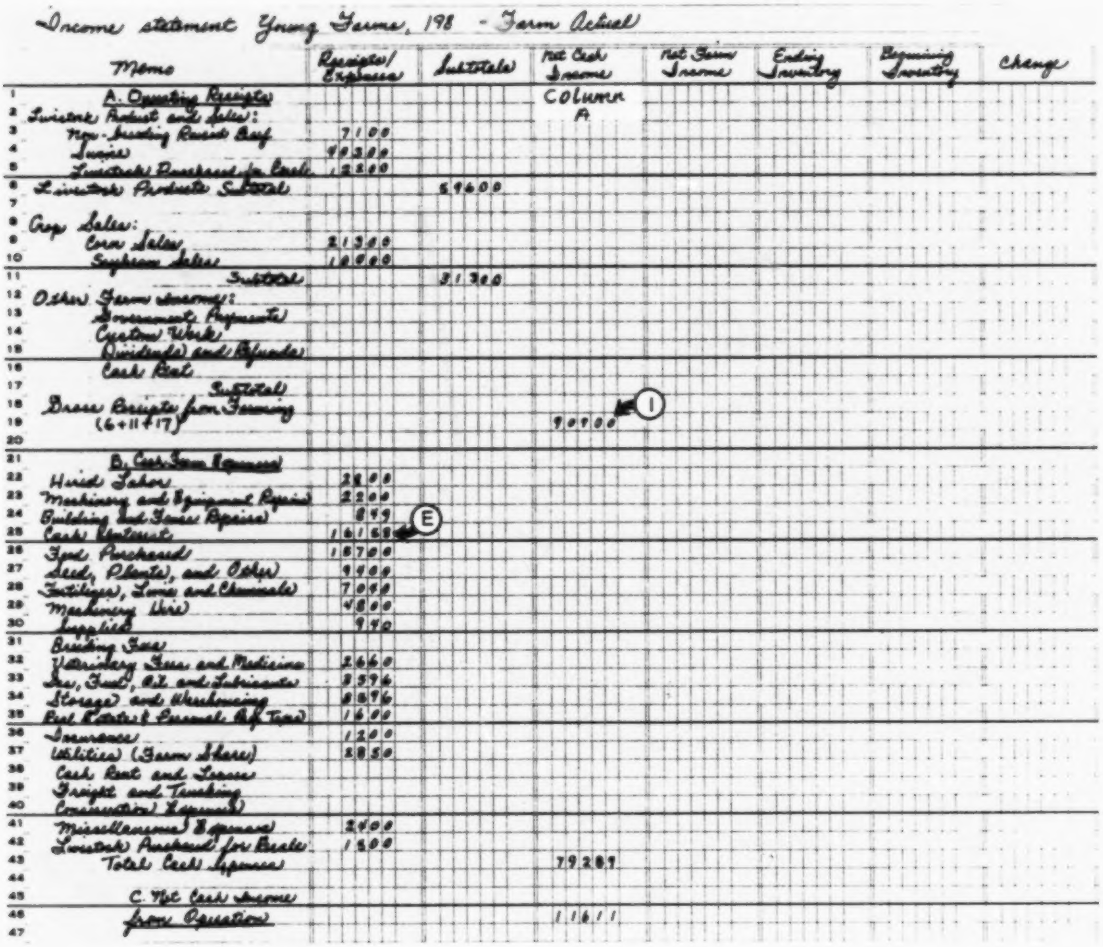


Fig. 19 — Expenses Are Money Paid Out To Operate The Business



Income statement Young Farms, 198 - Farm Actual

	Memo	Receipts/ Expenses	Subtotals	Net Cash Income	Net Farm Income	Ending Inventory	Beginning Inventory	Change
1	A. Operating Receipts			Column A				
2	Livestock Product and Sales:							
3	Non-Breeding Raised Beef	7100						
4	Swine	49300						
5	Livestock Purchased for Resale	2200						
6	Livestock Products Subtotal		59600					
7								
8	Crop Sales:							
9	Corn Sales	21300						
10	Soybean Sales	10000						
11	Subtotal		31300					
12	Other Farm Income:							
13	Government Payments							
14	Custom Work							
15	Dividends and Refunds							
16	Cash Rent							
17	Subtotal							
18	Gross Receipts from Farming							
19	(6+11+17)			90900				
20								
21	B. Cash Farm Expenses							
22	Hired Labor	2800						
23	Machinery and Equipment Repairs	2200						
24	Building and Fence Repairs	849						
25	Cash Interest	16168						
26	Feed Purchased	15700						
27	Seed, Plants, and Other	9400						
28	Fertilizer, Lime and Chemicals	7040						
29	Machinery Hire	4800						
30	Supplies	940						
31	Breeding Fees							
32	Veterinary Fees and Medicine	2660						
33	Gas, Fuel, Oil and Lubricants	3596						
34	Storage and Warehousing	3576						
35	Real Estate & Personal Prop. Taxes	1600						
36	Insurance	1200						
37	Utilities (Farm Share)	2850						
38	Cash Rent and Leases							
39	Freight and Trucking							
40	Conservation Expenses							
41	Miscellaneous Expenses	2400						
42	Livestock Purchased for Resale	1500						
43	Total Cash Expenses			79289				
44								
45	C. Net Cash Income							
46	from Operation			11611				
47								

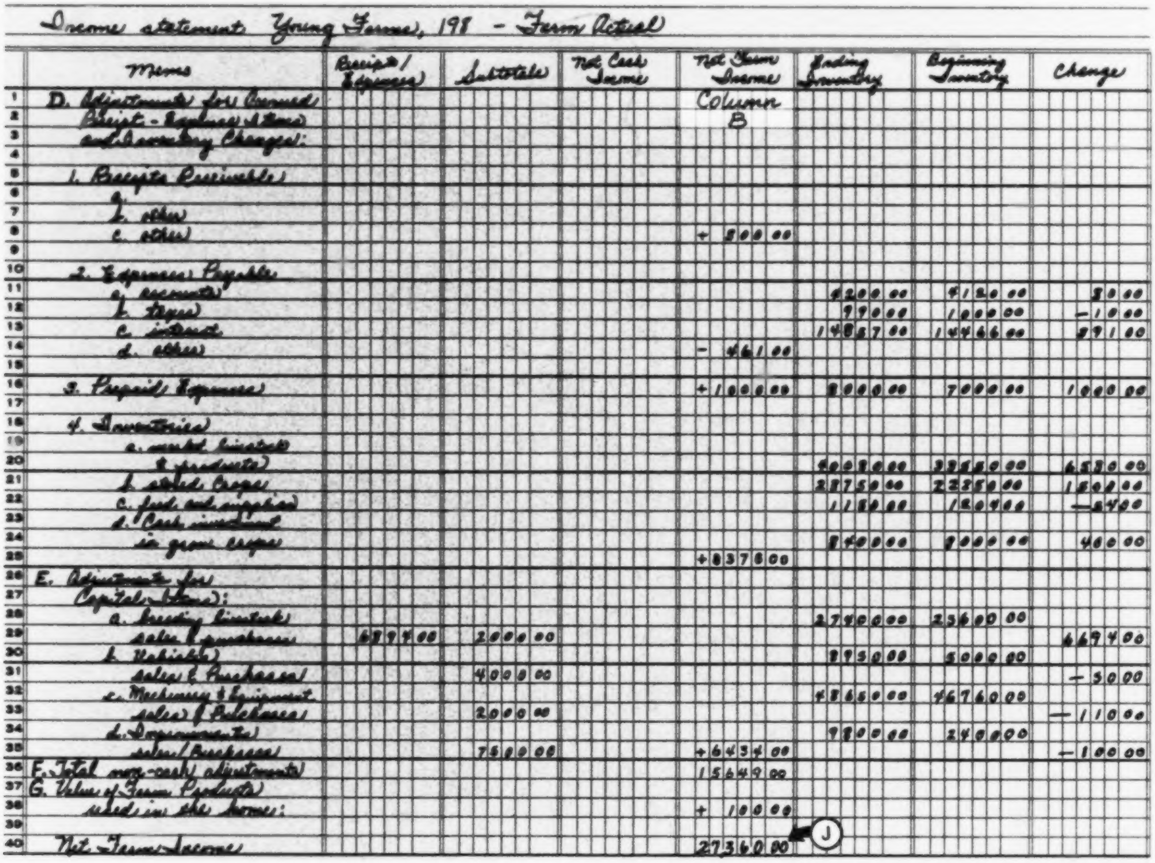
Fig. 20 — Income Statement — Left Side

NET CASH INCOME

Rod finds his net cash income (Fig. 21) by subtracting operating and fixed expenses from gross income. This is what remains in order for Rod to cover repayment of debt, family living expenses, new investment in the business, and additional savings.

$$$$$ Gross Income
-$ Operating Expenses
-$ Fixed Expenses
=$$$ Net Cash Income

Fig. 21 — Net Cash Income Is What Remains After Subtracting Operating And Fixed Expenses



Income statement Young Farms, 198 - Farm Actual

	Memo	Receipts/ Expenses	Subtotals	Net Cash Income	Net Farm Income	Ending Inventory	Beginning Inventory	Change
1	D. Adjustments for Accrued				Column			
2	Receipt - Expenses Items				B			
3	and Inventory Changes:							
4								
5	1. Receipts Receivable							
6	a.							
7	b. other							
8	c. other				+ 800 00			
9								
10	2. Expenses Payable							
11	a. accounts					4200 00	4120 00	80 00
12	b. taxes					990 00	1000 00	−10 00
13	c. interest					14857 00	14466 00	391 00
14	d. other				− 461 00			
15								
16	3. Prepaid Expenses				+ 1000 00	8000 00	7000 00	1000 00
17								
18	4. Inventories							
19	a. market livestock							
20	& products					40080 00	33550 00	6530 00
21	b. stored crops					23750 00	22350 00	1500 00
22	c. feed and supplies					1180 00	1204 00	—24 00
23	d. Cash investment							
24	in grown crops					8400 00	8000 00	400 00
25					+ 8378 00			
26	E. Adjustments for							
27	Capital Items:							
28	a. breeding livestock					27400 00	23600 00	
29	sales & purchases	6794 00	2000 00					4694 00
30	b. Vehicles					8950 00	5000 00	
31	sales & Purchases		4000 00					− 30 00
32	c. Machinery & Equipment					48650 00	46760 00	
33	sales & Purchases		2000 00					− 110 00
34	d. Improvements					9800 00	2400 00	
35	sales/Purchases		7500 00		+ 6434 00			− 100 00
36	F. Total non-cash adjustments				15649 00			
37	G. Value of Farm Products							
38	used in the home:				+ 100 00			
39								
40	Net Farm Income				27360 00			

Fig. 20 — Income Statement — Right Side

ADJUSTMENTS

Rod must make some adjustment in receipts, expenses, and inventories in order to show farm income accurately (Fig. 22). He made the adjustments by comparing the beginning and ending estimates for (refer to inventory adjustments in Chapter 2):

- Expenses payable
- Prepaid expenses
- Adjustments in inventories

In addition, Rod adds the value of farm products that are consumed in the home.

NOTE: This process of using inventory adjustments converts a cash income statement to an accrual income statement. This adjustment gives a more accurate picture of the current financial status of a business.

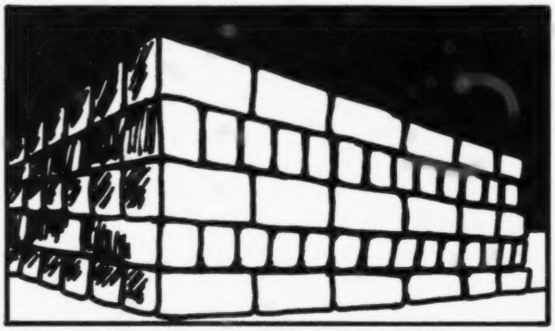


Fig. 22 — An Income Statement Requires Adjustments In Inventories

NET FARM INCOME

Net farm income is the cash income and the adjustments that are added together. Net farm income is a return to unpaid operator and family labor, equity, capital, and management. By including the adjustments, Rod Young adds more components to his original formula for the income statement. Look at the complete income statement for Young Farms (Fig. 20). The formula for an Income Statement now is:

Net Farm Income (J) = Net Cash Income + Non-cash Adjustments (The totals of column A + B, Fig. 20)

(J) $27,360 = $11,611 + $15,749

Note: In column A, Fig. 20, the $79,289 (total cash expense) is subtracted from $90,900 (total receipts).

Rod uses the same three methods that he applies to the net worth statement:

- Comparative analysis
- Ratio analysis
- Projected analysis

COMPARATIVE ANALYSIS

Comparative analysis lets Rod compare income statements to find trends in receipts and expenses. When income is variable, the analysis of one income statement alone can be misleading. As he accumulates income statement information for several years, Rod can compare the performance of similar years.

Useful comparisons also can be made by comparing information from his income statement with that from other farms. There are averages of farms that are using similar as well as differing types of operations. This gives him information about how his performance measures up to other farmers.

RATIO ANALYSIS

Rod can calculate an expense to income ratio from the information in the income statement:

- An expense to income ratio measures the input-output efficiency of the business. Three types of expense to income ratios help him recognize the expense structure of the business:

  - The operating ratio
  - Fixed ratio
  - Gross ratio

See the expense to income ratios in Figure 23.

With all income ratios presented, the lower the number the less the expenses are compared to gross income.

The operating ratio lets Rod compare expenses (variable) to gross income. Young Farms had an operating ratio of .66. This means that 66 cents of every dollar of gross income was spent for operating expenses.

The fixed ratio lets Rod compare fixed expense to gross income. The fixed ratio for Young Farms was .21. For every dollar of gross income, 21 cents was spent for fixed expenses such as insurance and taxes.

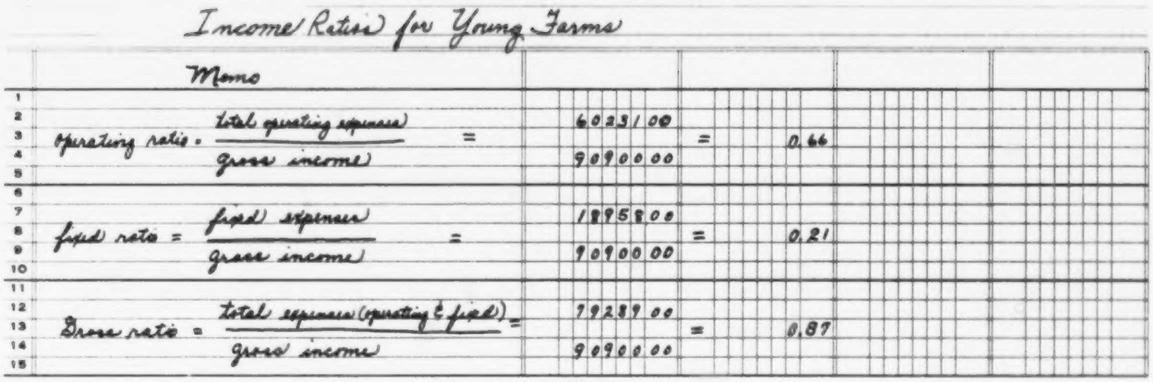
Rod adds the operating and fixed ratio together to get the gross ratio. With the gross ratio Rod can compare operating and fixed expense to gross income. The gross ratio for Young Farms was .87. For every dollar of gross income received, 87 cents is spent on total expenses.

Rod uses income to investment ratios to tell how efficiently he is using capital. The capital turnover ratio for example, shows how Rod's business assets compare to the value of farm production. The capital turnover ratio for Young Farms is:

$$\text{Capital Turnover} = \frac{\text{Unadjusted Gross Income (I) + Non-Cash Adjustments (totals of Sections D \& E in Column B, Fig. 20)}}{\text{Average Capital Investment } (G + H \text{ (Fig. 9)} \div 2)}$$

$$\frac{\$90{,}900 + \$15{,}649}{\$304{,}545} = 0.35$$

⑤



Income Ratios for Young Farms

Memo

Operating ratio = total operating expenses / gross income = 60231 00 / 90900 00 = 0.66

fixed ratio = fixed expenses / gross income = 18958 00 / 90900 00 = 0.21

Gross ratio = total expenses (operating & fixed) / gross income = 79189 00 / 90900 00 = 0.87

Fig. 23 — Income Statement Ratios

The unadjusted gross income is the gross receipts (I) Fig. 20, plus noncash adjustments (column A + B) Fig. 20.

The unadjusted gross income figure is calculated from information from Fig. 20. These are gross receipts plus (minus) adjustments. Average capital investment is taken from the net worth statement Fig. 9. The average capital investment is total farm assets on December 31, Year 1 (G) and December 31, Year 2 (H) ($279,125 + $329,965) ÷ 2 = $304,545.

The higher the capital turnover ratio, the quicker the turnover of assets, and generally the greater the likelihood of profits.

Beef cow-calf operations (Fig. 24) usually have a low capital turnover ratio compared to a cash grain or dairy operation. Profitability is generally lower for the cow-calf operation. A ratio greater than 1 to 5 (or 0.20) is what you want. Slower turnover, less than 20 percent per year, frequently spells financial disaster, particularly if much borrowed money is used. Many nonfarm businesses have turnovers of 5 to 1 rather than 1 to 5 found in agriculture. Those businesses also have a smaller operating margin. Operations that rent land or equipment normally have higher turnover than owner-operator business.

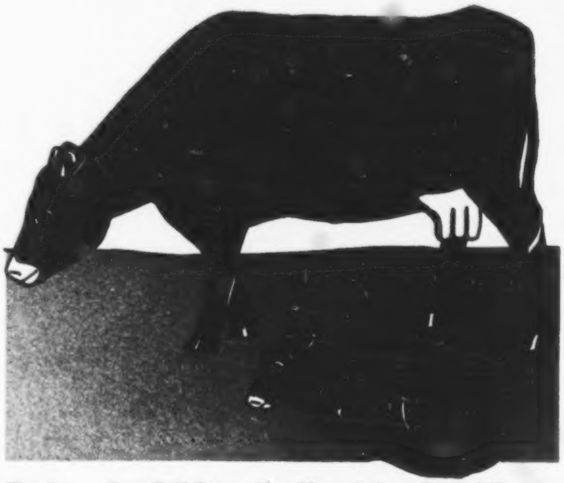


Fig. 24 — Cow-Calf Operations Have A Low Capital Turnover Ratio

Rod Young finds out that there is one category of labor not shown on income statements. Income statements do not show a charge for unpaid operator and family labor (Fig. 25), or the cost of management if it is provided by the operator. In analyzing income statements, however, target objectives for these costs should be determined.

Fig. 25 — Unpaid Family Labor Does Not Appear On Income Statements

The operator allowance of $12,000 (F) is determined from a 2,080 hour work year. Rod is adding 1 work year for his labor and .44 work year for family help. At $4.00 an hour, this becomes 2,995 hours x $4.00 = $11,980 **or** $12,000 rounded off. This $4.00 cost varies greatly from one geographic location to another.

Net farm Income	$27,360	(Fig. 20, J)
Less Operator Allowance	-12,000	(See above)
Return to Equity Capital and Management	$15,360	③

Return On Total Capital

Rod can figure his rate of return to capital (Fig. 26) by dividing net return to total capital and management by average capital investment. This ratio shows the percentage return on investment of the business. The rate of return on capital for Young Farms for the year represented in Fig. 9 and Fig. 20 is 10.3%.

$$\text{Rate of Return on Total Capital} = \frac{\text{Return to Total Capital and Management}}{\text{Average Capital Investment}}$$

$$\frac{\$27,360 + \$16,158 - \$12,000}{\$304,545} = \frac{\$31,518}{\$304,545} ④ = 10.3\%$$

The return to total capital and management equals $27,360 or net farm income (J) Fig. 20, plus interest paid as operating expense or $16,158 (E) Fig. 20, minus the operator allowance of $12,000 (F). Average capital investment is explained in the capital turnover formula.

A value calculated for rate of return on capital can be compared with the investment opportunities in the nonfarm market, such as stocks, bonds, savings accounts, federal land bank or insurance companies. The rate of return on capital values calculated for farms, however, tend to be lower than those rates available in the nonfarm sector.

The mix of the type of capital used on the farm should be considered in making comparisons because the values used in calculating rate of return on capital include long term, as well as intermediate and short term capital. The values that the farm is paying is totaled together to obtain this rate of return on capital.

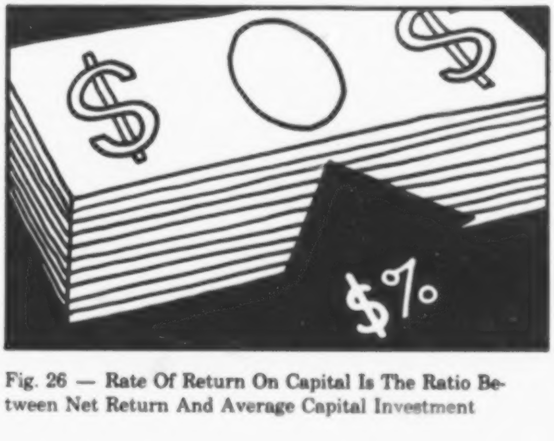


Fig. 26 — Rate Of Return On Capital Is The Ratio Between Net Return And Average Capital Investment

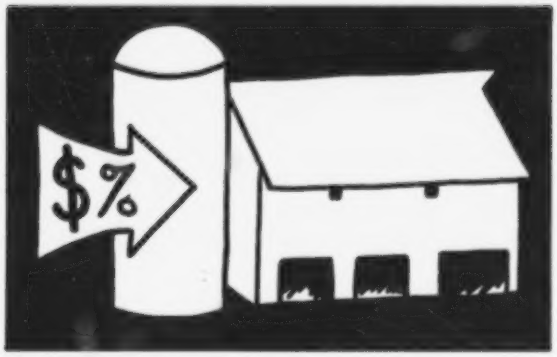


Fig. 27 — Rate Of Return On Equity Capital Is Return To Equity Capital And Management Divided By Average Farm Net Worth

Return On Equity Capital
Rod also can figure the rate of return on his equity in the farm (Fig. 27). That ratio tells him his return on net worth. The rate of return to equity capital for Young Farms is 10.6% this year and is calculated as follows:

$$\text{Rate of Return on Equity Capital} = \frac{\text{Return to Equity Capital and Management}}{\text{Average Farm Net Worth}}$$

$$\frac{\$27{,}360 - \$12{,}000}{\$144{,}106 \text{ ⑥}} = \frac{\$15{,}360}{\$144{,}106} = 10.6\%$$

Rod obtains the return to equity capital and management by subtracting an allowance for operator and family labor $12,000 (F) (page 3-14) from the Net Farm Income $27,360 (J) (Fig. 20). Rod finds the **average** farm net worth by dividing the total of the net worth figures for December 31 year 1 and 2, Fig. 9 **by 2.** These are found at points (1) and (2) (page 3-5).

The rate of return on equity capital will show more variation over time than rate of return on capital. This occurs because rate of return on equity capital is calculated from the residual income that remains after assuming values for paying all factors of production. The rate of return on equity capital, however, over time, should be a higher value than rate of return on capital. This value represents a risk component that is held by the operator and should over time show compensation for this factor.

The rate of return on the borrowed money used in the farm business must exceed the interest cost of that money or Rod will be lowering his equity if he has money borrowed.

The rate of return on borrowed capital can be calculated by subtracting the return to equity capital (3) (page 3-14) from the return to capital and management (4) (page 3-14) and dividing this by the average capital investment (5) (page 3-12) minus the average net worth (6) (page 3-15).

The formula is:

$$\text{Rate of Return on Borrowed Capital} = \frac{\text{Return to Capital - Return to Equity Capital}}{\text{Average Capital Investment - Average Net Worth}}$$

$$\frac{\$31{,}518 - \$15{,}360}{\$304{,}545 - \$144{,}106} = 10.07\%$$

This value (10.07%) should be compared with the average interest rate for borrowed capital from a lending institution to evaluate whether returns are great enough to pay the cost of borrowing those funds.

You also can compare your return on borrowed capital with your return on equity capital. For example, if your rate of return on borrowed capital is higher than your rate of return on equity capital, then you can compare a lending institutions lending rate with your results.

If Borrowed Capital rate = 10.7%
And Equity Capital rate = 10.1%
It may be profitable to borrow the money.

If your rate of return on borrowed capital is lower than your rate of return on equity capital then you should **not** borrow the money.

If Borrowed Capital rate = 12%
And Equity Capital rate = 13%
Then you should **not** borrow the money.

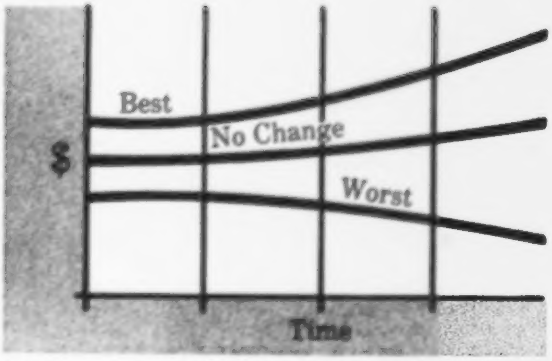


Fig. 28 — Projected Analysis Is Used To Predict Income

PROJECTED ANALYSIS

Rod Young finds that projected analysis can also be used with an income statement. Projections require considerable planning. Rod projects an income statement for business as it is now, and then he can include changes in the structure of the business. Even if no changes are made, considerable thought needs to be given to such things as price and yield projections. Rod may project several income statements (Fig. 28):

- A pessimistic situation
- Optimistic situation
- Projection assuming no significant change

Net Worth and Income Statement Relationships

Financial statements (net worth and income statement) and the cash flow summary have specific relationships that tie all of them to each other (Fig.29). Each statement provides a different dimension of the financial picture of the farm business. The net worth statement looks at the financial characteristics of a farm at one point in time. The income and cash flow statements provide information regarding the performance of the farm within the period between one net worth statement and the next.

The three components of an ending net worth statement can be calculated by using the previous net worth income statement and information from the cash flow statement. To calculate the value of the assets in the ending net worth statement, you should:

Beginning Assets

Plus: Non-Cash Reinvestment
Plus: Changes in Inventory
Less: Depreciation

Ending Assets

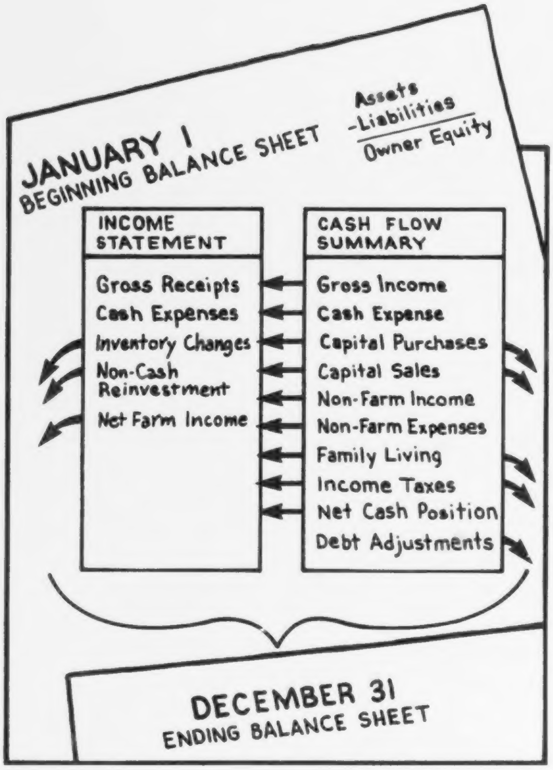


Fig. 29 — The Income Statement And Cash Flow Summary Have Relationships That Are Tied To Each Other

We can also calculate the value of the ending liabilities by taking values of:

Beginning Liabilities

Plus: New Debt Added
Less: Debt Repaid

Ending Liabilities

Owner equity or net worths can be calculated by subtracting the ending liabilities from the ending assets. However, the owner equity can be validated by calculating the following:

Beginning Owner Equity

Plus: Net Farm Income
Less: Family Living and Income Taxes

Ending Owner Equity

The use of the net worth and income statement, and the cash flow summary, can provide a useful insight into the reasons why financial progress has or has not been achieved. It helps Rod assess the potential that exists in his enterprise budget that he has obtained from his vo-ag teacher. He is able to see that the fixed costs on his father's farm are very close to being what is shown in the enterprise budgets that he has obtained.

LONG-TERM ASSETS AND NET WORTH STATEMENTS

The most difficult part of developing an accurate net worth statement is realistically valuing your long-term assets. Land, buildings, and improvements present a problem because of their nature.

- These long-term assets can't be easily changed to capital like current or intermediate assets.
- They are usually part of the business for many years; often they are part of the entire life of the business.
- Their values on financial statements must be estimated in order to get credit and to plan for future enterprises.

Because of this, you should be **conservative** when you value long term assets. Use the 'book value' and do not entirely relly on 'current value' when you estimate their worth for long range planning.

A net worth statement that is built upon current value alone will be valid only for a short time. Market prices due to deflation and inflation continually fluctuate.

Net worth statements must be based upon a realistic estimate of long-term assets that do not use market value as the only measure.

In order to get a true and accurate picture of your financial situation, you may want to develop net worth statements based upon current values and separate statements based upon the more conservative book values (original cost minus depreciation if it applies). Do not rely solely on current prices of long-term assets to create your statements.

Note: "Market" and "current" values often are used interchangeably.

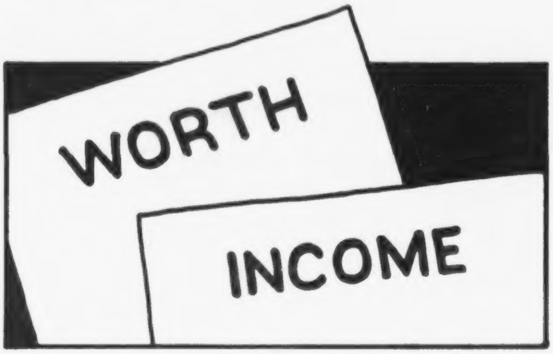


Fig. 30 — The Financial Statement Includes Net Worth And Income

SUMMARY

A financial statement is like a health report from your doctor. A financial statement has two parts (Fig. 30):

- Net worth
- Income

The net worth statement and the income statement are measures of the strengths and the weaknesses of the farm business. These statements help pinpoint problems in the health of a farm business. Lending institutions and nonfarm businesses providing resources to farms require these financial statements plus cash flow analysis before providing credit.

The most widely accepted financial statement is the net worth statement. It provides information about what assets are owned and what liabilities are owed.

The net worth statement that is correctly taken at the same time each year, is the single best measure of the financial progress of the business.

The net worth statement does not show profits. The income statement is the measure of profit. The income statement shows change from one net worth statement to another.

The two sets of financial statements together are powerful tools for farm and ranch business management.

BUDGET ANALYSIS

CHAPTER 4

PLANNING A BUDGET

Farm business management has become more difficult and challenging due to rapidly changing production and economic conditions. The job that you do when you budget for your farm or ranch business shows up in your record book. Good planning equals increased returns (Fig. 1).

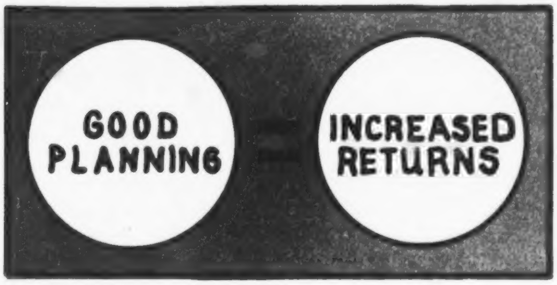


Fig. 1 — Plan For The Future

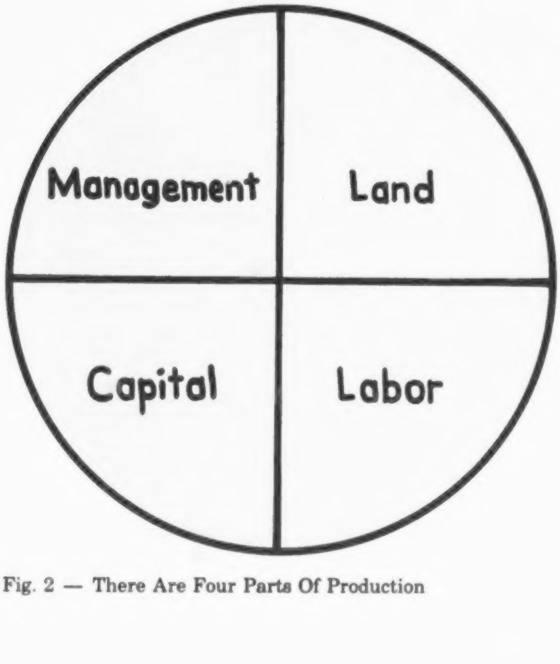


Fig. 2 — There Are Four Parts Of Production

In order to plan, you must know the amount and value of the four parts of production that you have (Fig. 2).

- Capital
- Labor
- Land
- Management

There are some questions that farmers and ranchers must answer about the four parts of production when they make a budget (Fig. 3):

Fig. 3 — Planning And Budgeting Are Challenging

- What is the best way to use available assets?
- What crops can be grown?
- What proportion of the land should be used for each crop considered?
- What labor is necessary?
- What capital is needed?
- What management and production practices should be used?

WHAT IS BUDGETING?

A budget can be a mental plan for spending or saving money. The best type of budget for a farm or ranch in our complex economy is a **formal plan** that is written down on paper. Budgeting is planning.

WHY BUDGET?

Budgeting is a good management tool for anyone with limited experience. Also, an established farmer or rancher needs to have a formal budget to keep up with economic or production changes which may alter the profitability of an enterprise.

There are a number of reasons for budgeting:

- Budgeting helps you know the useful life of assets.
- Budgeting is an excellent device for organizing.
- Budgeting is useful when you need credit from lending agencies.
- Budgeting allows experimentation with possible outcomes before resources are actually committed to the change.
- Budgeting exposes cost and income items that might otherwise be overlooked.
- Budgeting lets you refine an organization.

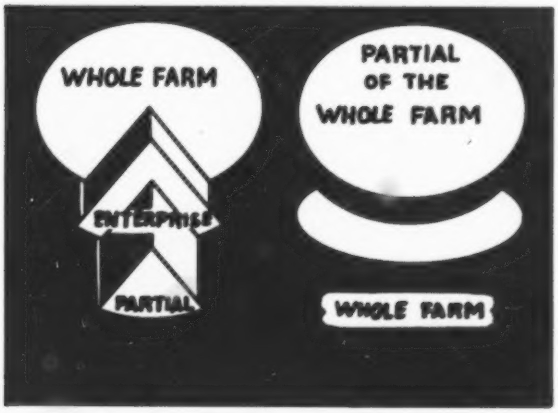


Fig. 4 — The Whole Farm Budget Can Be Divided Into Many Pieces

BUDGETING RESOURCES

When you budget resources for the farm or ranch, use them wisely. Plan to combine available resources so that they will maximize net income to best meet your farm or ranch business and family goals. Budgeting provides an opportunity for testing the income and expenses of alternative plans "on paper" before putting them into your operation.

TYPES OF BUDGETS

There are three types of budgets that are discussed in this chapter (Fig. 4):

- **Enterprise** is a statement of expected returns and costs that are associated with **one** production process; usually it is for one production period.
- **Whole farm** is a physical and financial plan for the entire farm or ranch business for a specific period of time. It is the total of all of the production processes.
- **Partial** is an estimate of the economic effects of some change in the farm or ranch business.

BUDGETING PRINCIPLES

Make budgeting easier. Learn the following principles before you try to budget. All budgeting involves one or more of these five fundamental economic principles (Fig. 5). These principles in a simplified form are:

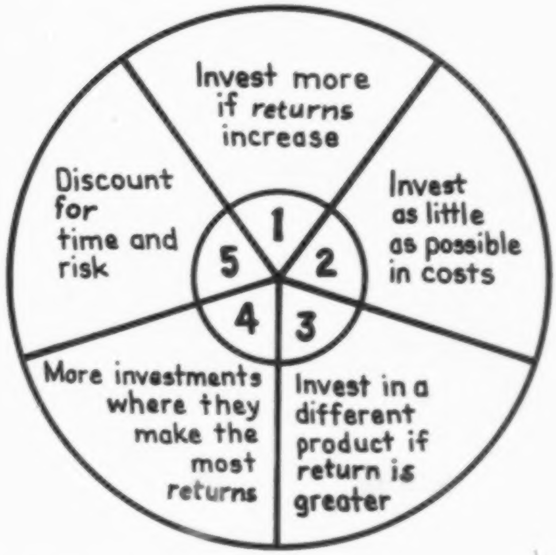

1
Invest more if *returns* increase
2
Invest as little as possible in costs
3
Invest in a different product if return is greater
4
More investments where they make the most returns
5
Discount for time and risk

Fig. 5 — Five Budget Principles

1. Invest more if the returns increase. Add units of an input as long as the value of the resulting output or added returns is greater than the added costs.

EXAMPLE: Fred Johnson will continue applying additional fertilizer to his corn crop as long as he gets an additional corn yield worth more than the cost of the fertilizer.

2. Invest as little as possible in costs (inputs). Substitute one input for another as long as the cost of the added input is less than the cost of the input which is replaced. The output must be maintained.

EXAMPLE: Joe Danberry will substitute hay for silage or silage for hay in a least-cost dairy ration as long as milk production for the dairy herd does not decrease.

3. Invest in a different product if the return (output) is greater. Substitute one product for another as long as the value of the added output is greater than the value of the output that you replaced. The cost must remain constant.

EXAMPLES: Which will mean greater profits — Corn for silage versus corn for grain; wheat hay versus wheat for grain; grazeout of wheat pasture versus harvesting wheat for grain.

These three principles would be enough for planning if you have unlimited resources and perfect knowledge. As this is usually not the case, two additional principles must be introduced:

4. Invest money where it will earn the largest returns. If you have limited resources, use each unit of resource where it will give the greatest returns (Maximum Profit Principle).

5. Discount for time and risk. When different problems involve different time periods and/or elements of risk, base comparisons on discounted values.

The budget process can incorporate any one or all five principles to help make decisions. No one type of budget is tied to any particular principle. The type of budget determines what will be planned while the principles are used as required to make decisions.

WHERE DO YOU GET BUDGET INFORMATION?

All budgets prepared for analysis should be based upon the best source of information available. A budget is only as good as the data you use.

When gathering data for use in budgets, consideration should be given to the quantity, price, and timing of the inputs required.

Some sources of information are:

- Actual farm or ranch records
- Area or state summary analysis
- Sample budgets
- County averages and production data
- Magazines and literature
- Information from meetings and classes
- Neighbors
- Computer networks

Use any or all of these sources to collect and verify data for budgets. Review data to make sure that it can be applied to your situation. Keep in mind that an experience from one year is only an indicator and does not assure that the same experience will happen the following year. It is a sign of good management to use more than one source to verify all data.

LIMITATIONS OF BUDGETING

Budgeting takes time (Fig. 6). You must search data sources for information. You face the problem of using your time so that the returns from budgeting are greater than the cost of budgeting.

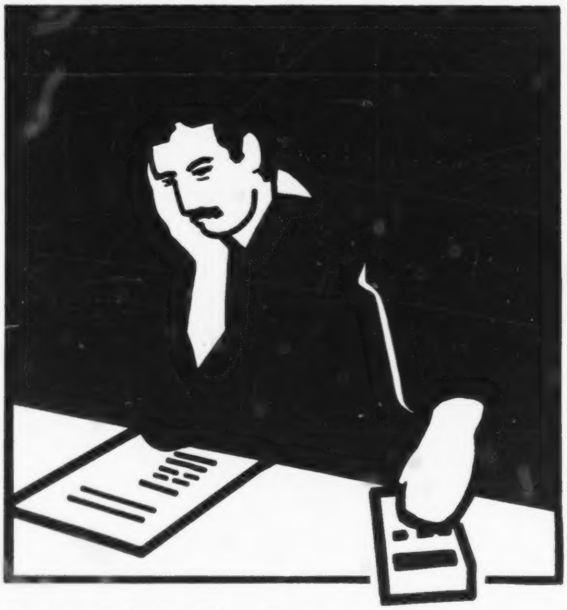


Fig. 6 — Budgeting Takes Time

Budgets are constructed to show future actions. It is difficult to accurately predict future prices and yields. Historical data helps establish a starting point. Forward contracting and hedging techniques help establish future prices.

Risks, both on the production and marketing sides, can limit the effectiveness of budget reliability. You must use your best judgement when you evaluate business situations. You must always consider the element of risk when you make your decisions about the future.

When determining budget estimates, some people underestimate costs and overestimate income. Because costs occur at many different times, it is easy to forget some of them. Any omission tends to hold cost figures down. Income, on the other hand, usually comes in at fewer times, and is seldom overlooked.

Some farmers or ranchers also overestimate production. Few operators achieve the production levels that magazines advertise or that experimental stations achieve under their highly controlled conditions. The point is, be careful when you budget. Get good information from more than one source and be realistic. Don't expect too much production from too little costs. Build in a cushion.

GUIDELINES FOR FARM OR RANCH BUDGETING

Budgeting provides a systematic approach to planning. It enables you to analyze and compare alternatives. Use these guidelines to make a good farm or ranch budget:

1. State why you want to analyze the budget.

2. Decide whether the analysis should apply to the entire farm or ranch business or to only one segment.

3. Decide whether to use enterprise, whole farm, or partial budgeting.

4. Choose a time period for the budget. This can be a month, quarter, or year.

5. Decide what data will be needed.

6. Decide how many alternatives will be evaluated or analyzed.

You may vary the sequence or the guidelines that you use depending upon your situation.

UNDERSTAND THE BUDGETING PROCESS

To understand the budgeting process, consider the situation of Jim Brown. Jim is a high school student who plans to attend college this fall. He is faced with many ways of financing and paying for his school and living expenses.

Suppose Jim had $750 per month available to meet his needs. Jim might develop a budget like this:

Average Budget For One Month

Income	
Part-time work	$300
Savings (summer job)	200
Parents	250
Total	$750
Expenses	
Room and board	$400
Tuition and books (prorated on a monthly basis)	154
Gasoline and car expenses	80
Clothes and laundry	50
Haircut	6
Recreation	60
Total	$750

This is not the only list that Jim could use. It is one of many possible budgets. For example, Jim could save money by doing some of his own cooking. He could sell his car, dress less expensively, participate in less costly recreational activities, and find a part-time job that pays more. Any of these changes would require a new budget. Because a budget is a formal plan that is written, it makes the decision maker think about every aspect of saving money. Putting the data down in writing helps make sure that everything is accounted for.

Remember, the objective of budgeting is a dollar and cents organization of the future (Fig. 7). A budget gives Jim a concrete set of plans that he can use to wisely spend his money.

Fig. 7 — A Budget Organizes Future Goals

STEPS IN DEVELOPING A BUDGET

The steps that Jim followed to develop his budget can be adapted to the farmer or rancher's needs:

1. Appraise the business and family goals and objectives.

2. Inventory the resources available for use in the farm or ranch operation. This inventory should take into consideration land, labor supply, how much money is available, and governmental and financial restrictions. You also must consider your ability to manage your business.

3. Select the physical data to be used.

4. Select the enterprises to be budgeted.

5. Select the market prices that apply to the resources.

6. Calculate the expected costs and returns.

Farmers or ranchers must have realistic business goals and objectives. The budget is aimed at achieving these goals and objectives. Remember the budget is a comprehensive plan for the future use of farm resources. It establishes a business direction for the farmer or rancher. Now that we have looked at the steps required to develop a budget, let's examine specific budgeting techniques.

ENTERPRISE BUDGETS

An enterprise budget is used to estimate future profit or returns by determining breakeven market prices, and estimating yields of a particular product. It projects what can be expected from particular production practices when they are used to produce a specific amount of a product (Fig. 8).

Fig. 8 — Enterprise Budgets Help Take The Guesswork Out Of Future Projects

LIMITATIONS OF ENTERPRISE BUDGETING

The lack of information is a problem with enterprise budgeting. Producers may not have complete information on conditions in the marketplace. Prices are difficult to determine because they fluctuate depending upon how much of the product is available. This creates risks that must be considered when planning an enterprise budget.

ADVANTAGES OF ENTERPRISE BUDGETING

Although farmers or ranchers often lack the information needed to make perfect decisions, they can make decisions on the basis of the information available and accept the results of that decision (Fig. 9). Enterprise budgets let you compare one crop or product to another. It allows you to decide which one to produce.

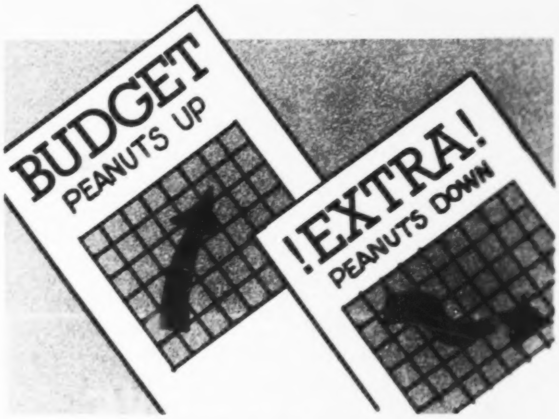


Fig. 9 — Be Prepared To Accept The Results Of Your Decisions

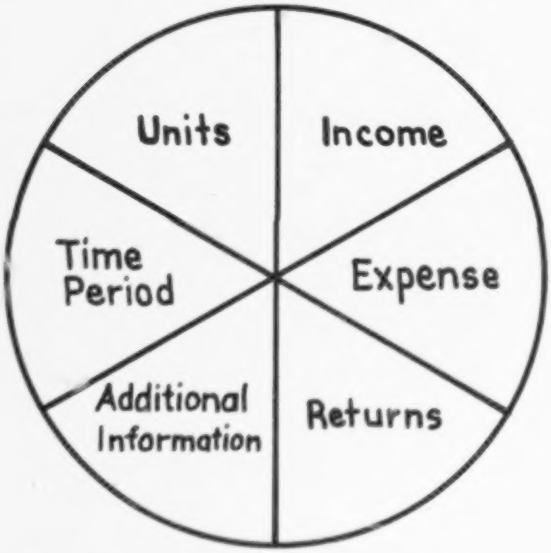


Fig. 10 — Components Of An Enterprise Budget

COMPONENTS OF AN ENTERPRISE BUDGET

There are several parts or components that make up an enterprise budget. We will discuss them one at a time (Fig.10).

- **Income** is an estimate of future yields and prices. This part shows what products are produced, the units the production is measured in, the expected price per unit, the expected amount of production, and the total estimated value of this production.

- **Expenses** are the cost of producing the farm commodity. This part shows the variable costs and fixed costs that go into the production of the product.

```
Example:     Income is an estimate of future yield and price

Production:                    Units        Price          Quantity    Value

                                                                        Ⓐ

Peanuts                        CWT          $23.00         17.00       $391.00
```

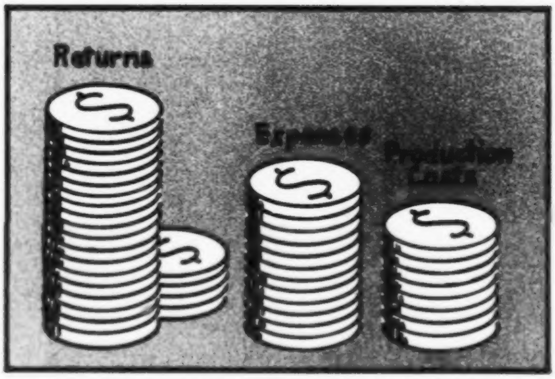


Fig. 11 — Returns Pay Expenses And Production Costs

- **Returns** are the money that is available after the expenses are paid that can be used to pay production costs (Fig. 11). Generally returns above operating costs and returns above all costs except overhead, risk, and management are calculated. Return and expense figures can be compared in several ways to get management information. For example:

- Returns Above Total Operating Costs

$ 391.00	projected value of peanuts (A)
−185.96	variable operating costs (B)
205.04	

- Returns Above All Costs Except Overhead, Risk, and Management

185.96	variable operating costs (B)
+100.37	fixed costs (C)
286.33	

$ 391.00
−286.33
$ 104.67

Example: Variable Operating Costs

Operating Inputs:	Units	Price	Quantity	Value
Peanut Seed	LBS	$0.520	70.000	$36.40
Nitrogen (N)	LBS	0.330	15.000	4.95
Phosph (P205)	LBS	0.290	30.000	8.70
Potash (K20)	LBS	0.140	30.000	4.20
Pre-merge Herb	ACRE	7.500	1.000	7.50
DNBP Amize	ACRE	3.750	1.000	3.75
Leaf Spot Dethan	ACRE	4.500	4.000	18.00
Terrochlor	ACRE	3.500	2.000	7.00
Rent Fert. Spreader	ACRE	1.000	1.000	1.00
Store & Proc. Equip.	CWT	0.400	17.000	6.80
Organizations	TONS	1.500	.850	1.27
Warehousing	TONS	13.490	.850	11.47
Annual operating capital	DOL	0.160	43.928	7.03
Labor charges	HR	4.000	4.784	19.14
Machinery (fuel, lubr. & repairs)	ACRE			48.76
TOTAL OPERATING COSTS				Ⓑ $185.96

FIXED COSTS	UNITS	VALUE
Machinery		
Interest at 16.0%	DOL	$49.930
Depr., taxes, insur.	DOL	50.436
Land		
Interest at 0.0%	DOL	0.000
Taxes	DOL	0.000
TOTAL FIXED COSTS		Ⓒ $100.37

```
                                                                 95810907
Peanut, Dryland                                                   01/02/8
SA & LA Soils Class I & II                                 EASTSOUTHCENTRAL

Terrachlor Incorporated at planting & Spread on at cultivation:
Seed are treated Dithene Leaf Spot - Four Aerial Applications
Apply Nemtocide Preplant & at pegging if needed.                 12/08/83

Processed by Dept. of Agri. Econ. - Oklahoma State University
Program developed at Dept. of Agri. Econ. -
Oklahoma State University

Returns above total operating costs
When the quantity of peanuts ranges from 15.00 to 19.00
and the price of peanuts ranges from 21.00 to 25.00

                            BREAKEVEN TABLE

PRICE OF PEANUTS                         QUANTITY OF PEANUTS

                15.00       16.00       17.00       18.00       19.00
         ***********************************************************
$21.00   *   129.94      150.44      171.04      191.64      212.24
         *
$22.00   *   144.84      166.44      188.04      209.64      231.24
         *
$23.00   *   159.84      182.44      205.04      227.64      250.24
         *
$24.00   *   174.84      198.44      222.04      245.64      269.24
         *
$25.00   *   189.84      214.44      239.04      263.64      288.24

     Returns Not Adjusted For Effect of Yield Changes on Costs
```

- **Additional information** for enterprise budgets may list additional information to clarify assumptions made in completing the budget. This could include type of soil, location of farm, chemical treatments, and breakeven tables. An example is above.

- **Time period** for annual crop or livestock activities will show costs for one production period. For a perennial crop, such as alfalfa, establishment costs should be amortized over the expected life of the stand.

- **Units** such as income, costs, and returns are calculated by the unit of production. For example, crops are usually calculated on a per acre basis and livestock is calculated on a per head basis.

TYPES OF COSTS

There are two general types of costs when an agricultural commodity is produced:

- Variable or operating costs
- Fixed costs

Variable costs are the costs of items such as seed, feed, fertilizer, normal repairs and maintenance, custom or hourly labor, and tractor operating expenses (Fig. 12). These are items that will be used during one year's operation or during one production period. They will not be purchased if the enterprise is not produced. Variable costs are always included in an enterprise budget.

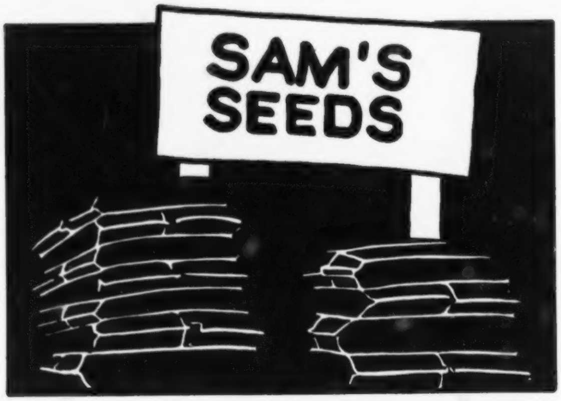


Fig. 12 — Variable Cost Items Include Seed, Feed, And Fertilizer

Fixed costs are the costs of such things as mortgage payments on buildings, machinery, and equipment (Fig. 13) that are prorated over a period of years. Included in this category are depreciation, interest, insurance, and taxes on buildings, machinery and equipment that can be allocated to an individual enterprise. Fixed costs are always included in an enterprise budget.

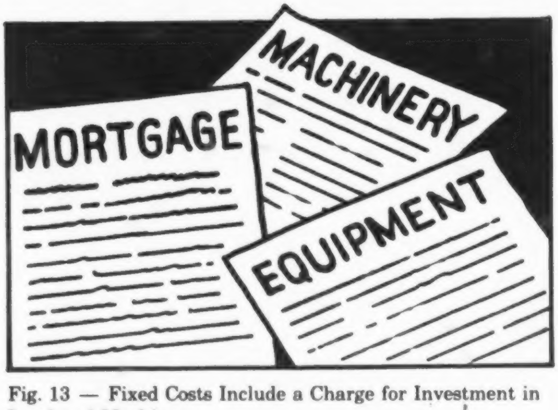


Fig. 13 — Fixed Costs Include a Charge for Investment in Land and Machinery

ALLOCATION OF COSTS

Some costs are difficult to allocate to a specific enterprise. Buildings, utilities, travel, and miscellaneous costs such as record keeping and budgeting fall into this category. They are involved with many enterprises on the farm or ranch. You should develop a consistent way to divide these costs among the many enterprises. Regardless of the method that you use, all costs must be accounted for (Fig. 14).

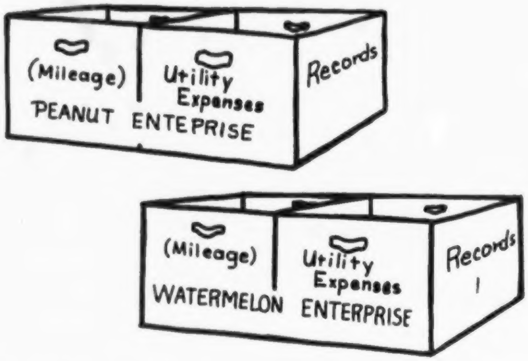


Fig. 14 — Some Enterprise Costs Are Difficult To Allocate

LAND

There are several ways to handle the cost of land in an enterprise budget. If cash rent is paid on an annual basis, show the rent as a variable cost. If cash rent is paid for a long term lease, say five years, prorate the rent and include it as a fixed cost. If land rent is paid on a crop share basis, reduce the value of production by subtracting the landlord's share of the production.

There are several ways to show the cost of owned land in a budget. One way is to include interest and taxes paid as fixed costs. Another way is to determine an opportunity cost (Example: renting your land to someone else) and enter that amount as a fixed cost. This opportunity cost will be covered in the next chapter.

You should experiment with different ways of showing these costs to find the way that is consistent and best for you.

HOW DO YOU USE AN ENTERPRISE BUDGET?

Now that you know about the parts of an enterprise budget, do you wonder how you could use one? Look at the case of Janet Black who has been raising watermelons (Fig. 15) as an FFA project for four years. It is early in the year, but Janet needs to determine if it will be profitable to raise watermelons again this year. She got the following representative budget for watermelon production for her area of the state from the state land-grant university.

Janet compares the figures in the representative budget with the enterprise records in her FFA record book (Fig. 16). She checks local prices for inputs and production. Janet feels that the figures in the representative budget are reasonably accurate and are the best available at this time. All of Janet's entries are for one acre of land.

Fig. 15 — Janet Plans Her Watermelon Production With An Enterprise Budget

Fig. 16 — The Enterprise Budget Helps Make Decisions

97771107
01/02/8
WESTSOUTHCENTRAL

Watermelon Production

Example: Variable Operating Costs

Operating Inputs:	Units	Price	Quantity	Value
Watermelon Seed	LBS	$0.170	1.500	$ 0.25
Nitrogen (N)	LBS	0.240	80.000	19.20
Phosph (P205)	LBS	0.180	30.000	5.40
Potash (K20)	LBS	0.120	50.000	6.00
Hand Hoeing	ACRE	10.000	4.000	40.00
Hand Harvesting	ACRE	20.000	4.000	80.00
RNTFERTSPRD/ACRE	ACRE	1.000	2.000	2.00
Insecticide	ACRE	5.500	2.000	11.00
Annual Operating Cap.	DOL	0.150	26.249	3.94
Labor charges	HR	4.250	2.952	12.55
Machinery (fuel lubr. & repairs)	ACRE			28.73

Ⓔ

TOTAL OPERATING COSTS $209.07

FIXED COSTS	UNITS	VALUE
Machinery		
Interest at 15.0%	DOL	$21.888
Depr., taxes, insur.	DOL	20.047
Land*		
Interest at 0.0%	DOL	0.000
Taxes (opportunity cost)	DOL	50.000
TOTAL FIXED COSTS		Ⓕ↘ $ 91.94

*Janet owns 25 acres of land and has the opportunity to rent it to a neighbor for $50.00 per acre. She, therefore, has included a $50.00 per acre charge for land in her fixed costs instead of a charge for taxes. Because she owns the land, interest is 0.0%

PRODUCTION	UNITS	PRICE	QUANTITY	VALUE
Watermelons	TONS	100.000	6.000	Ⓓ 600.00

RETURNS ABOVE TOTAL OPERATING COSTS

$600.00	Projected Value Ⓓ
-209.07	Variable Operating Cost Ⓔ
390.93	

RETURNS ABOVE ALL COSTS EXCEPT OVERHEAD, RISK, AND MANAGEMENT

$ 91.94	Fixed Costs Ⓕ
+209.07	Variable Operating Cost Ⓔ
$301.01	

$600.00	Projected Value Ⓓ
-301.01	Returns Above All Costs Except Overhead, Risk and Management
$298.99	

N, P & K amounts are actual pounds of material.
Watermelons are rotated on a 4 year basis.
Melons are loaded on semi-truck in field.

Processed by Dept. of Agr. Econ. - Oklahoma State University
Program developed by Dept. of Agr. Econ. Oklahoma State University

THE ANALYSIS

As Janet studies the enterprise budget she determines the following:

- **Returns above variable operating costs** equal $390.93 ($600.00 projected value (D) of production — $209.07 total variable operating costs (E)). Janet knows that, as long as the returns are more than the variable operating costs, she can continue to raise watermelons. At least part of the fixed cost will be paid, thus reducing any possible loss. Janet also realizes that if this return had been less than the variable cost, she would be sure of a loss.

- **Returns above all costs** equal $298.99 ($600.00 projected value (D) of production — $301.01 total of variable operating cost and fixed cost). Janet knows that in the long run this return must be more than expenses. If it is not, she must consider another enterprise (Fig. 17).

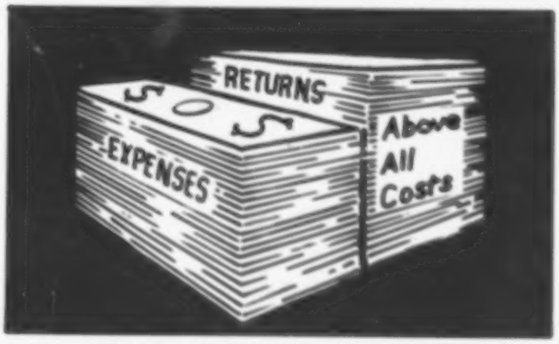


Fig. 17 — Returns Above All Costs Must Be Greater Than Expenses

- **The breakeven price** is $34.85/ton to cover variable costs if operating and yield cost remain constant ($209.07 total operating cost (E) divided by six tons).

- **The breakeven yield** to cover total operating costs equals 3.01 tons ($301.01 total operating costs divided by $100 per ton price of watermelons) if operating costs and selling price do not change.

MODIFYING THE BUDGET

Nothing stays the same (Fig. 18). The market changes. So as time passes, Janet may need to change some of the figures in the enterprise budget. It may be necessary to:

Fig. 18 — Nothing Stays The Same

- Change prices, yields, rates, practices, and costs
- Combine returns and costs in different ways
- Charge for land by crop or cash rent
- Adjust for soil or production conditions

COMPARE COMPETING ENTERPRISES

Janet visits several neighboring farms and sees other FFA members raising cantaloupe. She doesn't know how to grow cantaloupes, but she has gotten a representative budget from the state's land grant university. She visits with fruit stand operators, neighboring farmers, the vocational agriculture instructor, and the county extension agent. With the best data that she can collect, Janet prepares the following representative budget. She plans to compare the cantaloupe budget with the watermelon budget that she develops (Fig. 19).

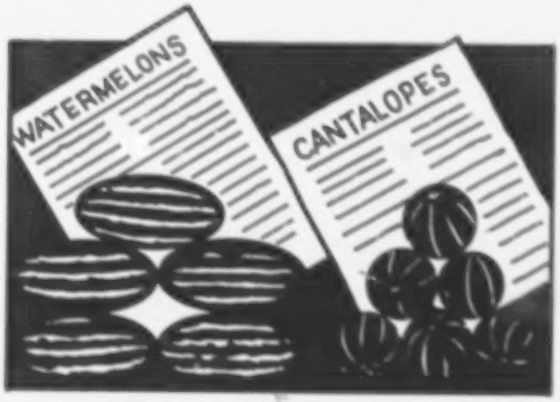


Fig. 19 — The Enterprise Budget Can Be Used to Compare Competing Enterprises

97771107
01/02/8
WESTSOUTHCENTRAL

Cantaloupe Production

Example: Variable Operating Costs

Operating Inputs:	Units	Price	Quantity	Value
Cantaloupe Seed	LBS	$5.000	1.500	$ 7.50
Nitrogen (N)	LBS	0.240	80.000	19.20
Phosph (P205)	LBS	0.180	30.000	5.40
Potash (K20)	LBS	0.120	15.000	1.80
Hand Hoeing	ACRE	10.000	4.000	40.00
RNTFERTSPRD/ACRE	ACRE	1.000	2.000	2.00
Insecticide	ACRE	5.500	3.000	16.50
Annual Operating Cap.	DOL	0.150	34.231	5.13
Labor charges	HR	4.250	2.952	12.55
Machinery (fuel lubr. & repairs)	ACRE			28.73
Chemicals	ACRE	10.000	3.000	30.00
Hand Harvesting	ACRE	30.000	4.000	120.00

TOTAL OPERATING COST Ⓗ $288.82

FIXED COSTS	UNITS	VALUE
Machinery		
Interest at 15.0%	DOL	$21.888
Depr., taxes, insur.	DOL	20.047
Land		
Interest at 0.0%	DOL	0.000
Taxes (opportunity cost)	DOL	50.000

TOTAL FIXED COSTS Ⓘ $ 91.94

PRODUCTION	UNITS	PRICE	QUANTITY	VALUE
Cantaloupe	TONS	$200.00	$4.000	Ⓖ $800.00

RETURNS ABOVE TOTAL OPERATING COSTS = G − H $511.18

RETURNS ABOVE ALL COSTS EXCEPT
OVERHEAD, RISK AND MANAGEMENT = G − (H + I) $419.25

```
N, P & K amounts are actual pounds of material.
Cantaloupe are rotated on a 2 year basis.
Cantaloupe are loaded on truck in field.
Sevin and Difolalin are chemicals used on cantaloupes.

Processed by Dept. of Agr. Econ. - Oklahoma State University
Program Developed by Dept. of Agri. Econ.
Oklahoma State University
```

After carefully studying the two enterprise budgets, Janet calculates the following comparisons:

- What price is needed for watermelons to give the same returns above all costs as shown on the cantaloupe budget?

$$\text{Returns above all costs for cantaloupe} = \text{Price of watermelons} \times \text{Yield of watermelons} - \text{Total costs of watermelons}$$

$$\text{Price of watermelons} = \frac{\text{Returns above all costs for cantaloupe} + \text{Total costs of watermelons}}{\text{Yield of watermelons}}$$

$$= \frac{\$419.25 + \$301.01}{6 \text{ tons}} = \frac{\$720.26}{6} = \$120.04 \text{ per ton}$$

Janet would have to receive a selling price of $120.04 per ton for her watermelons to receive the same returns as the cantaloupe enterprise.

- What yield is needed for watermelons to give the same returns above all costs as the cantaloupes?

$$\text{Yield of watermelons} = \frac{\text{Returns above all costs for cantaloupe} + \text{Total costs of watermelons}}{\text{Price of watermelons}}$$

$$= \frac{\$419.25 + \$301.01}{\$100 \text{ per ton}} = \frac{\$720.26}{100} = 7.20 \text{ tons}$$

Janet would have to produce 7.2 tons of watermelons per acre to have the same returns above costs as cantaloupes. These are only two of many ways Janet could have compared the two enterprise budgets.

MORE THAN DOLLARS AND CENTS

Enterprises have peculiar characteristics that require management decisions. Costs and returns are only part of the data that you need to evaluate enterprises. Some enterprises have high variable costs such as labor. Others have high capital demands. Some enterprises require large amounts of purchased material. Others do not. Some enterprises give rapid capital turnover, others take several years. Some enterprises fare better in certain geographical areas than others. It may be unwise to rely entirely on enterprise budgets to make your decisions (Fig. 20).

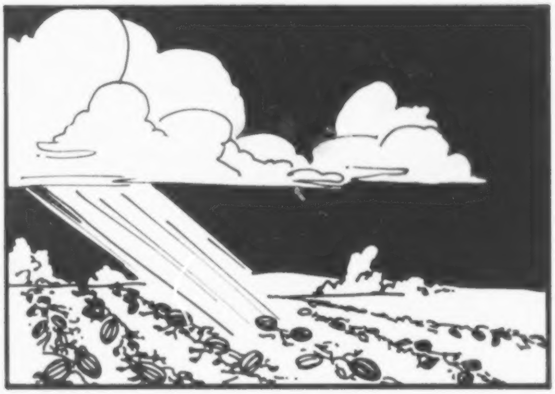


Fig. 20 — Don't Rely Entirely On Enterprise Budgets For Decisions

WHOLE FARM BUDGETING

What is a whole farm budget? It is a classified and detailed summary of the major physical and financial features of the entire farm or ranch. It is set up to help plan and organize every aspect of the business. Making this analysis means identifying the parts of the total farm or ranch business and determining the relationships among the different parts that occur both individually and as a whole.

Whole farm budgets can apply to periods of more than one year. The time period that you cover in your whole farm budget should be long enough to allow any needed major adjustments or reorganization of the farm or ranch (Fig. 21).

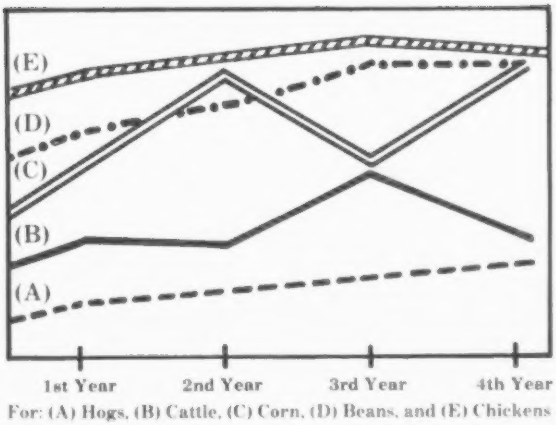


Fig. 21 — Whole Farm Or Ranch Budgets Help Forecast The Future

Whole farm budgets are frequently used to answer broad questions such as:

- "What if I develop a custom harvesting business to supplement my farming or ranching operation?"
- "What if I switch from conventional tillage to minimum tillage?"
- "What if I add a dairy enterprise?"

LIMITS OF WHOLE FARM OR RANCH BUDGETING

Often the amount of land and operating capital that you have or can acquire are limiting factors in the analysis. Other factors, such as accurate information on assets, your managerial skills, and markets can limit the amount of analysis. Recognize and plan for these fixed limitations in the whole farm budget. The results of the whole farm budget combine the resources, the constraints, technical information and price data into a realistic whole farm plan for the farm or ranch. The outcome helps the farmer or rancher maximize returns to their own resources.

PARTIAL BUDGETING

The partial budget helps the manager evaluate changes within budgets (Fig. 22). Partial budgets estimate the economic effect of minor adjustments in some portion of the farm or ranch business. With partial budgeting, you assume that many aspects of the business are fixed in the short run. The partial budget analysis helps the manager evaluate changes in the use of resources that are not fixed.

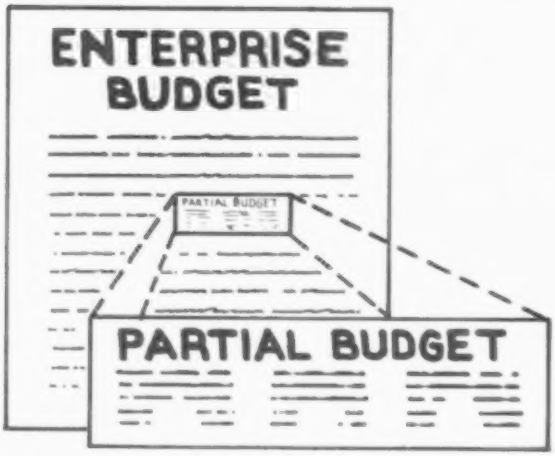


Fig. 22 — Partial Budgets Help Analyze Changes Within Budgets

PRINCIPLES OF PARTIAL BUDGETING

Many changes which do not require a complete reorganization are possible on a farm or ranch. You can use resources in more than one way. For example, you can vary this use depending upon changes in product price and cropping patterns. Partial budgets also are useful in evaluating changes such as:

- Expanding an enterprise
- Alternative enterprises
- Changing production practices
- Buying new equipment or machinery

COST AND RETURN

Partial budgeting is based on the principle that **a small change in the organization of a business will have one or more of the following effects:**

- The change will eliminate or reduce some costs
- The change will eliminate or reduce some returns
- The change will cause additional costs to be incurred
- The change will cause additional revenues to be received

The net effect will be the sum of the positive economic effects minus the sum of the negative economic effects (Fig. 23).

Fig. 23 — Partial Budgeting Requires Balancing

COMPONENTS OF A PARTIAL BUDGET

The typical partial budget usually consists of a seven-part plan. The seven parts are:

Column One	Column Two
Negative effects	**Positive Effects**
1. Additional costs	4. Additional returns
2. Reduced returns	5. Reduced costs
3. Total additional costs and reduced returns	6. Total additional returns and reduced costs
7. Net change in income (line 6 minus line 3)	

Each of the four categories of cost and return is used to estimate the effect of a proposed change.

Negative Effects

Additional costs are those that will occur if the change takes place. Costs and returns that do not change are not included in the partial budget. Reduced returns are the returns that would not be received under the change.

The total of additional costs and reduced returns are an estimate of the total negative economic effects of making the change.

Positive Effects

Additional returns are the added receipts that will be received if the alternative plan is adopted. Reduced costs are those that you won't have if the change is made. The total additional returns and reduced costs are an estimate of the total positive economic effects of making the change.

Net Change In Income

The net change between positive and negative economic effects is an estimate of the net effect of making the proposed change. A positive net change in income indicates a potential change in income if the change is made. A negative net change in income indicates a potential reduction in net returns if the proposed change is made.

AN APPLICATION OF PARTIAL BUDGETING

Bob Turnell used partial budgeting to calculate the dollar effect of grazing out or harvesting a wheat grain crop (Fig. 24). The decision had to be made around March 1 and be based on expected yields and prices of both wheat and stockers. He has had stocker steers grazing wheat since December. His decision was, "Should I leave them there or sell them and harvest the wheat crop?"

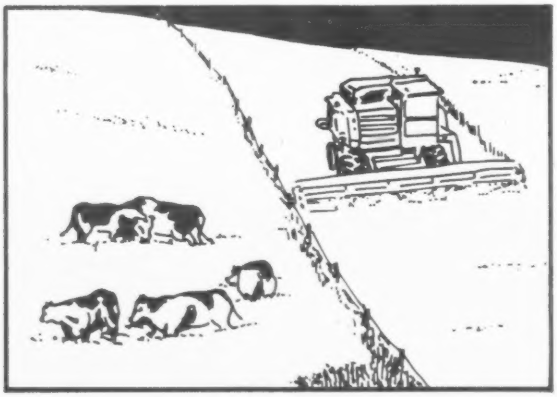


Fig. 24 — Partial Budgeting Helps Calculate The Economic Effects Of Change

Bob got the data on prices and yields from representative budgets for wheat and stockers supplied by the state land grant university. Listed below are price and yield estimates for the applicable period. Bob's budget is prepared on a per acre basis with a stocking rate from March 1 to May 15 of one steer per acre of wheat.

Expected rate of gain per steer from March 1 to May 15 — 1.7 lbs. per day

Initial weight on March 1 will be 570 lbs. per head.

500 to 600 lb. choice steers value on March 1 — $70.00 per cwt.

600 to 800 lb. choice steers sold on May 15 — $66.00 cwt.

Wheat yield — 32 bushels per acre

Wheat price on June 1 — $3.30 per bushel

Interest on capital (livestock) from March 1 to May 15 — $1.87 per steer

Salt and mineral costs from March 1 to May 15 — $1.14 per steer

Labor from March 1 to May 15 — $3.39 per steer

Vet cost from March 1 to May 15 — $3.15 per steer

Custom combining — $14.00 per acre

Custom hauling — $0.14 per bushel or $4.48 per acre

ADDITIONAL COSTS

Additional costs, are incurred if Bob keeps the steers through May 15. Interest expense is increased because the cattle are held two and one-half months longer. Salt and mineral costs are increased. Labor costs and veterinary services also increase. These costs are incurred only while the cattle are kept (Fig. 25).

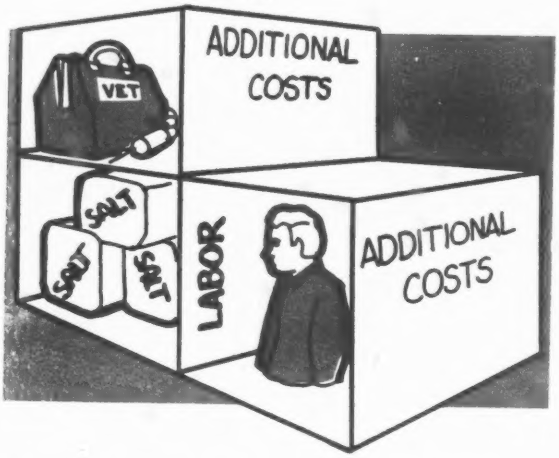


Fig. 25 — Additional Costs Must Be Planned For In A Partial Budget

REDUCED RETURNS

Reduced returns are returns which will not be received if grazeout occurs. The value of the wheat not received when grazeout occurs is listed. Yield and price shown are estimates based on current expectations.

ADDITIONAL RETURNS

Additional returns include the value of the beef grown from March 1 to May 15 at a stocking rate of one steer per acre and gaining 1.7 pounds per day. Using the 570 pound initial weight, the steer should weigh 699 pounds on May 15. The value of the steer on March 1 (570 x $.70 = $399.00) is subtracted from its value on May 15 (699 x $.66 = $461.34) to yield a dollar value of the potential gain (461.34 - 399.00 = $62.34). Listed weights are averages. The price is estimated and based on current expectations.

REDUCED COSTS

Reduced costs list the cost of custom combining and hauling, which are not incurred if grazeout is chosen.

NET CHANGE IN INCOME

A total of column one (additional costs and reduced returns) shows a figure of $115.15. This represents the total negative economic inpact of the change.

A total of column two (additional returns and reduced costs) shows a figure of $80.82. This represents the total positive economic effect.

Subtracting the total of column one ($115.15) from column two ($80.82) yields a net change in income of -$34.33. This represents the economic effect of grazing out the wheat and selling the steers May 15 versus selling the steers March 1 and harvesting the wheat for grain. Bob will lose $34.33 per acre if he keeps the steers on the wheat.

FURTHER REASONING

On or about March 1, Bob must decide whether to sell the stocker steers and harvest the wheat later in the spring or keep the steers to graze out the crop (Fig. 26). The result of Bob's partial budget will affect his decision. He must remember that these prices can only be estimated. If the assumptions in the partial budget are correct, Bob can sell the steers on March 1 and harvest the wheat for grain. This will create an increase in net farm income.

Fig. 26 — Partial Budgets Affect Decisions

The Partial Budget Form

Situation: To leave stockers on wheat pasture from March 1 to May 15 rather than remove stockers and combine wheat for grain (per acre basis).

Additional Costs

Interest on capital		$1.87
Salt and mineral		$1.14
Labor		$3.39
Vet		$3.15
	Subtotal	$9.55

Reduced Returns

Wheat production 32 bushels at $3.30/bu.		105.60
	Subtotal	$105.60

A. Total Additional Costs and Reduced Returns	$115.15

Additional Returns

Added return if stockers are kept to May 1		$62.34
	Subtotal	$62.34

Reduced Costs

Custom combining		$14.00
Custom hauling		$ 4.48
	Subtotal	$18.48

B. Total Additional Returns and Reduced Costs	$80.82

Net Change in Income (B Minus A) $-34.33

PARTIAL BUDGETING SUMMARY

Partial budgeting is a simplified procedure that helps farmers and ranchers make decisions. This analysis is not designed for total farm or ranch planning, but rather to estimate the economic consequences for some part of the farm or ranch operation. The partial budgeting concept is a step-by-step process for identifying all the costs and returns that change due to alterations in one or more of the production processes. Once these costs are identified, they are weighed against each other to estimate the economic consequences of the change. Remember that the results can only be as good as the data. Be careful when preparing estimates for various categories. Test several values for yields and prices for their effect on the ultimate outcome.

AIDS TO BUDGETING

There are several decision aids to help you build the information necessary for preparing budgets. A piece of paper and pencil is a start. Calculators and record books can be used effectively. Several microcomputer and mainframe software programs have been developed to aid in preparing budgets (Fig. 27). Machinery cost programs can help determine the length of time that machinery should be kept before replacement and provide an estimate of cost for operating machinery. Feed mix programs help choose least-cost rations for livestock budgets. Investment analysis programs can provide information regarding the purchase of budget inputs.

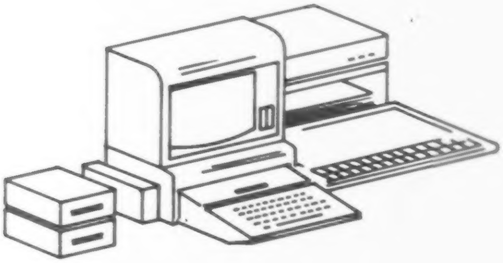


Fig. 27 — A Calculator Or A Small Computer Can Help With Budgeting

There are many programs available that let you construct, modify, and compare enterprise budgets quickly. Also, the Economic Research Service of the USDA has initiated a systematic approach to the development and maintenance of farm enterprise budgets. The USDA keeps up-to-date estimates of the cost of producing certain commodities. These enterprise budgets represent the average current technology being used in crop and livestock enterprises. Copies of the FEDS budgets are available from each land grant university (generally the agricultural economics department) and certain USDA agencies in each state.

Another program that has been developed is a model that is very useful in whole farm budgeting. This program determines the most profitable mix of crop and livestock enterprises for an individual operation. It uses expected costs and returns reflecting operator-based input decisions of costs, prices, and operator preferences.

SUMMARY

Budgeting, whether it is enterprise, whole farm, or partial is "forward planning." It involves the formulation of expectations about the future. It is particularly concerned about input-output relationships, product prices, and costs of production.

Budgeting serves as a guide in decision making (Fig. 28). The primary value lies in providing comparisons of alternative courses of action and in developing a logical procedure to carry out a chosen course of action.

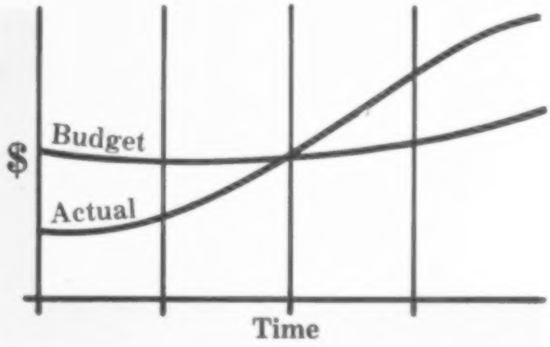


Fig. 28 — Budgeting Is A Guide For Decision Making

COST ANALYSIS

CHAPTER 5

INPUT AND OUTPUT

The budget is the primary decision-making tool for the farm or ranch manager. It compares the total estimated costs to an expected return.

In whole farm, partial, or enterprise budgets there are two types of costs. Fixed costs occur no matter what product is produced. Variable costs are expenses that occur only if a specific enterprise is undertaken.

The materials that determine these fixed and variable costs are called inputs. The amount of the input that is used in production can be varied to produce different results. These results are called outputs.

Cost analysis allows you to determine the most efficient amounts of input for producing an output (product) (Fig. 1). This basic input-output relationship is called a production function.

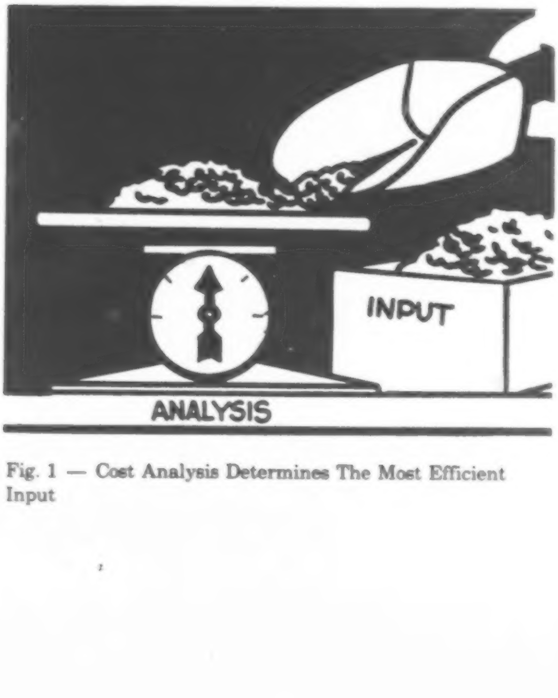


Fig. 1 — Cost Analysis Determines The Most Efficient Input

PRODUCTION FUNCTION (INPUT-OUTPUT RELATIONSHIP)

John Jones is a vocational agriculture student. His father agrees to enter into a joint venture with John to grow corn on 100 acres of the family farm. John has no resources except for his own labor. In exchange for his labor, John will use his father's machinery and other fixed cost material.

John must pay all of the variable inputs in the operation, such as seed, gasoline and fertilizer. From this enterprise he will receive a percentage of the returns. John begins the enterprise by obtaining a corn budget from his vocational agriculture teacher. The general budget represents variable and fixed inputs and estimated outputs that he will need and can produce.

John notices a number of interesting relationships from the budget. He asks "What if I vary the amount of fertilizer." He also thinks about seeding rate, tillage, and weather. What effect will they have on the enterprise? John has begun the process of cost analysis (Fig.2).

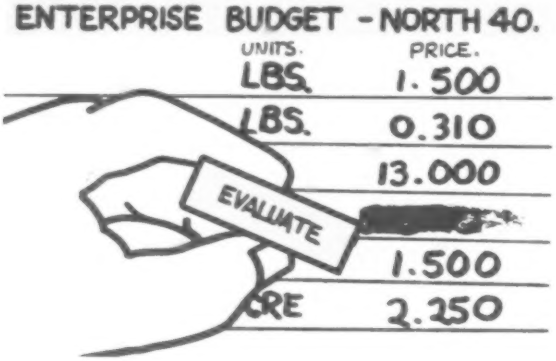


Fig. 2 — Cost Analysis Lets You Evaluate Input/Output Relationships

```
                          ENTERPRISE BUDGET

                                                            01/02/8
                                                         Anyplace, USA
CORN
OWNED EQUIPMENT

Example: Variable Operating Costs

Operating Inputs:    Units     Price     Quantity     Value      Your Value

Corn Seed            LBS      $1.300     25.000      $32.50
Nitrogen (N)         LBS       0.330    170.000       56.10
Phosph (P205)        LBS       0.290     40.000       11.60
Herbicide            ACRE     12.000      1.000       12.00
Insecticide          ACRE     11.000      1.000       11.00
RNTFERTSPRD/ACRE     ACRE      1.000      1.000        1.00
Insecticide          ACRE      6.500      1.000        6.50
Insecticide (3X)     ACRE     27.150      0.500       13.57
Annual Oper. Cap.    DOL       0.150     23.492        3.52
Labor charges        HR        4.250      1.863        7.92
Machinery (fuel      ACRE                             23.68
  lubr. & repairs)


TOTAL OPERATING COSTS                                179.39


FIXED COSTS          UNITS     VALUE     YOUR VALUE

Machinery
  Interest at 15.0% DOL       $28.514
  Depr., taxes,      DOL       29.082
  insurance

Land
  Interest at 0.0%   DOL        0.000
  Taxes              DOL        0.000

TOTAL FIXED COSTS             $ 57.60

PRODUCTION     UNITS     PRICE        QUANTITY     VALUE      YOUR VALUE

Corn           BU        3.250        120.000     390.00
Pasture        AUMS      0.000          1.400       0.00

TOTAL RECEIPTS                                    390.00

RETURNS ABOVE TOTAL OPERATING COSTS               210.61

RETURNS ABOVE ALL COSTS                           153.01
EXCEPT OVERHEAD, RISK AND MANAGEMENT
25000 Seed Population                                       BAINBRIDGE
CUSTOM COMBINE COST INCLUDES HAULING

Processed by Dept. of Agr. Econ. - Oklahoma State University
Program developed by Dept. of Agr. Econ. Oklahoma State University
```

John continues his research by obtaining fertilizer application rates from his county extension office. He plots this data on a graph and makes a production function (Fig. 3).

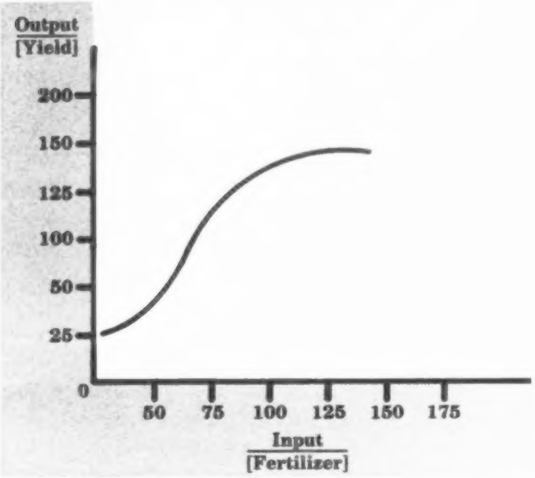


Fig. 3 — Application Rates Can Be Plotted To Show A Relationship

DIMINISHING RETURNS

From this graph he sees that there is a particular point where yield begins to decline. He remembers the principle of diminishing returns that he learned from his vocational agriculture teacher.

The principle states that if an input is added to an enterprise the output will increase at a certain rate. After an initial time of increase, the input will have no effect, and the output will begin to decrease.

John realizes that he can use this principle to fine-tune his Enterprise Budget for Corn. As he looks at the production function (See Fig. 3), he realizes that he can use other data to help him confirm his facts (Fig. 4).

Fig. 4 — There Are Many Sources Of Data That Can Help Make Production Decisions

He recalls the information that he learned in school about yield levels for corn. He knows that corn yield peaks at about 150 bushels with approximately 125 units of fertilizer in his county. He also knows that he can produce 25 bushels of corn without fertilizer.

With this information, he knows that anything more than 125 units of fertilizer would be wasted. It also would actually decrease the corn yield.

From further research John finds another interesting fact. There are three stages of production that can be applied to the production function graph (Fig. 5).

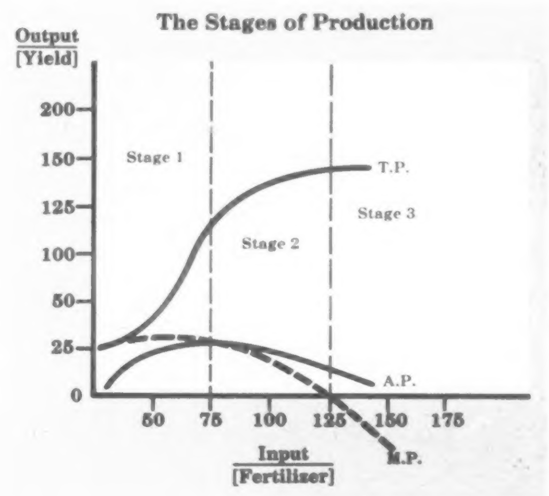


Fig. 5 — John Can Divide His Production Into Three Stages

THE THREE STAGES OF THE PRODUCTION FUNCTION

- **Stage 1** of production is an increasing return for each added unit of input. The average product is the total yield (T.P.) divided by the number of units of the variable input.

- **Stage 2** begins when the marginal product equals the average product. Diminishing returns begin to develop in Stage 2. (In Fig. 5, line A.P. actually begins to touch line M.P. at 75.)

- **Stage 3** begins when the marginal product (M.P.) becomes zero. In this stage, the total product actually decreases if input increases.

Like a rocketship, production gets an initial boost upwards by adding inputs. It gradually begins to level off, and then rapidly descends (Fig. 6).

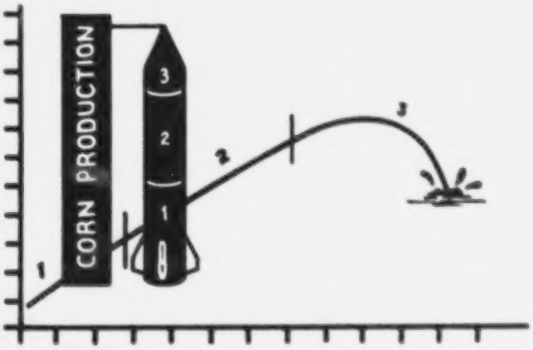


Fig. 6 —John Uses The Three Stages Of Production To Help Determine Corn Production

HOW MUCH INPUT FOR MAXIMUM PROFIT?

John realizes that market prices must be added to the production function in order to determine the most profitable combination. The exact point in Stage 2 that is most profitable will depend upon the relative price of the product (corn), and the cost of the input (fertilizer).

If corn prices are high, then you will operate closer to Stage 3. If the corn prices are lower, then you will operate closer to Stage 1. The reverse holds true for the fertilizer price. A lower fertilizer price moves you closer to Stage 3, and a higher fertilizer price puts you closer to Stage 1. You must make your management decisions from the second stage of production. This is the stage of highest profitability.

THE PROFIT MAXIMIZING RULE

- **Maximum profit** will be obtained if you add the variable input to the point where the value of the marginal product (VMP) equals the price of the added input — or: VMP = price of input. The VMP is found by multiplying marginal product (MP) by the price of the product.

John decides that he wants to apply this rule to his corn enterprise. The yield response data that he had obtained from his county extension director shows responses that are achievable on John's father's farm.

CALCULATE THE PROFIT

John calculates the average product, the marginal product, and the value of marginal product, for the corn fertilizer relationships that he has obtained (Table A). After calculating the information, John must answer this question: What yield level gives me maximum profits or income over variable costs? Remember, John must pay all variable costs. To answer this question it is necessary to calculate the added cost of the fertilizer.

The fertilizer unit is made up of 25 pounds of nitrogen, 12 pounds of phosphate, and 12 pounds of potash. The prices per pound are 26 cents, 26 cents, and 13 cents for N, P, and K respectively. This amounts to a cost of $11.18 per unit of fertilizer.

Now that John has done all the computations, the new information will help him with his production decision by letting him apply the profit maximizing rule.

The yield response data shows a point where there is diminishing returns. As another unit of fertilizer is added the added yield response becomes smaller. In fact, with eight units of fertilizer the total yield declines slightly to 149 bushels.

John looks at the table and applies the profit maximizing rule; the price of input = VMP. This gives the profit maximizing point. John notes that the added cost of fertilizer is $11.18 per added unit. Also, John notes that the VMP declines at a point due to the physical diminishing returns from the addition of more fertilizer. John finds that maximum profit is obtained by applying between 3 1/2 and 4 1/2 units of fertilizer. The highest marginal product result shows the midpoint where negative change occurs. At 3 1/2 the value of the marginal product is $21.00 (I) and exceeds the cost of the added fertilizer of $11.18 cents by $9.82. When one additional unit of fertilizer is added (4 1/2 units), the added return is only one bushel at $3.00. The added costs are $11.18. His total profit would then decrease by $8.18 (J). (See Table A).

Table A

John's Calculations of the Maximum Profit Level For His Corn Enterprise [Price of Corn is $3 per bushel]

Units of Fertilizer [Col 1]	Yield [Col 2]	Marginal Product [Col 3]	Average Product [Col 4]	Value of Marginal Product [Col 5]	Added Cost of Fertilizer [Col 6]	Contribution to Total Profit [Col 7]
0	89		89			
1	115	26	115	$ 78	$ 11.18	$ 66.82
Ⓑ 2	Ⓐ 136	21	68	$ 63	$ 11.18	$ 51.82
Ⓒ 3	Ⓓ 148	12	49	Ⓓ $ 36	Ⓔ $ 11.18	$ 24.82
4	155	7	39	$ 21 Ⓘ	$ 11.18	$ 9.82
5	156	1	31	$ 3	$ 11.18	$ -8.18 Ⓙ
6	156	0	26	$ 0	$ 11.18	$-11.18
7	154	-2	22	$ -6	$ 11.18	$-17.18
8	149	-5	19	$ -15	$ 11.18	$-26.18

Formulas and examples:	DATA From the County Extension Director	$\frac{D-A}{C-B}$	$\left[\frac{\text{Col. 2}}{\text{Col. 1}}\right]$ [A ÷ B]	$\left[\begin{array}{c}\text{Price of}\\ \text{Corn} \times\\ \text{Column 3}\end{array}\right]$		$\left[\begin{array}{c}\text{Col. 5} -\\ \text{Col. 6}\end{array}\right]$ [D − E]

FIXED COSTS

The fixed expenses are not used in this analysis. They are not considered when analyzing input use and when determining the production levels in an enterprise budget. However, when farmers or ranchers create budgets they must add fixed costs to their calculations. This can make the difference between a profit or a deficit. John wondered what would be the fixed cost per acre for growing corn. Fortunately his father has a good set of computerized records and is able to tell John that fixed costs per tillable acre for his farm is $55.00 (Fig. 7). In comparing this number with the number presented in the enterprise budget that he had obtained from his vocational agriculture teacher, he is able to see that the fixed cost on his father's farm is very close to what is shown in the enterprise budget.

Fig. 7 — Fortunately John's Fixed Costs Are On File In The Computer

So, what level of yield should John strive for in this enterprise? He makes his decision from the analysis shown in Table A, and from the value of the marginal product plus the added cost of the fertilizer. He decides to apply approximately 4 units of fertilizer and plan for 155 bushels of yield per acre. John reworks the enterprise budget shown at the beginning of this chapter. He adds these values and recalculates his returns at the bottom of the budget. Now the enterprise budget represents his own situation and helps him make a profitable production decision.

THE OPPORTUNITY COST

Many times it is difficult to know how to calculate a value of resources that are controlled by the manager of the farm or ranch business. Let's consider John's situation to see if a process can be developed to determine values for these resource costs (Fig. 8).

Fig. 8 — Opportunity Costs Are Applied to Resources Controlled By The Farm or Ranch Manager

John wants to develop a total cost of all inputs used in his corn project to help him make management decisions. Since John provides all the labor for the corn enterprise, he must decide what is the value of his labor. Only he can realistically determine this value.

Last summer John had an opportunity to go to work for another individual for $6.00 per hour on a construction job. John knows that the offer is still available and that he could still receive $6.00 per hour for his labor. The rate of $6.00 per hour is common for that type of work. There are other jobs available in that area that John could have at the same rate. He thinks that to obtain a realistic value for his cost in producing corn, he should use the value of $6.00 per hour in the calculations. This is the value that he could receive for his labor if he were working at an alternative job.

This is a very important concept for John to consider when looking at the resources that he controls. Among these resources are such items as labor, capital, land, and machinery. This concept is called opportunity cost. Simply stated, opportunity costs are the cost of using a resource in one way based on the return that could be obtained from using it in the next best alternative way. John's opportunity cost for his labor is $6.00 per hour and that is the value that he should use in the enterprise budget.

John is now ready to evaluate his corn enterprise budget with his production function information and opportunity cost concept. This analysis includes the added fixed cost information that has been provided by his father for which his father is responsible. It shows that John's variable costs will be $159.67 (K) per acre and his fixed costs will be $55.00 (L) per acre. The total cost is $214.67 (M) per acre. His return, as determined from the production function information and other information, is $465.00 (N) per acre excluding any returns from the pasture that would be available from the after-math corn. This gives a return above all costs, except overhead, risk, and management of $250.33 (O). A further discussion on how to analyze and change the enterprise budget, is presented in Chapter 4.

```
                                                                  01/02/
                                                           Anyplace, USA
CORN
OWNED EQUIPMENT

Example: Variable Operating Costs

Operating Inputs:    Units     Price       Quantity       Value       Your Value

Corn Seed            LBS       $1.300      25.000          $32.50     __________
Nitrogen (N)         LBS   .26 ~~0.330~~   ~~170.000~~ 100.00  56.10  ___26.00___
Phosph (P205)        LBS   .26 ~~0.290~~   ~~40.000~~  48.00   11.60  ___12.48___
Herbicide            ACRE      12.000      1.000           12.00      __________
Insecticide          ACRE      11.000      1.000           11.00      __________
RNTFERTSPRD/ACRE     ACRE      1.000       1.000           1.00       __________
Insecticide          ACRE      6.500       1.000           6.50       __________
Insecticide (3X)     ACRE      27.150      0.500           13.57      __________
Annual Oper. Cap.    DOL       0.150       23.492          3.52       __________
Labor charges        HR   6.00 ~~4.250~~   1.863           7.92       ___11.18___
Machinery (fuel      ACRE                                  23.68      __________
  lubr. & repairs)
Potash                          .13        48.00                         6.24

TOTAL OPERATING COSTS                                      179.39     159.67 Ⓚ

FIXED COSTS          UNITS     VALUE       YOUR VALUE

Machinery
  Interest at 15.0%  DOL       $28.514
  Depr., taxes,      DOL        29.082
  insurance

Land
  Interest at 0.0%   DOL        0.000           Ⓛ                        Ⓜ
  Taxes              DOL        0.000

TOTAL FIXED COSTS              $ 57.60     55.00                      214.67

PRODUCTION      UNITS     PRICE         QUANTITY      VALUE       YOUR VALUE
                            3.00          155.00                          Ⓝ
Corn            BU        3.250         120.000       390.00        465.00
Pasture         AUMS      0.000           1.400         0.00

TOTAL RECEIPTS                                        390.00        465.00

RETURNS ABOVE TOTAL OPERATING COSTS                   210.61        305.33
                                                                      Ⓞ
RETURNS ABOVE ALL COSTS                               153.01        250.33
EXCEPT OVERHEAD, RISK AND MANAGEMENT

25000 Seed Population                                       BAINBRIDGE
CUSTOM COMBINE COST INCLUDES HAULING

Processed by Dept. of Agr. Econ. - Oklahoma State University
Program developed by Dept. of Agr. Econ. Oklahoma State University
```

EQUI-MARGINAL PRINCIPLE

In analyzing their farm business, John and his father make some decisions based upon profit maximization. Those decisions are that the hog operation must expand and that the crops be appropriately fertilized. They base their assumptions on the fact that their resources are not limited. In further talking with his father he decides that he should at least consider some analysis of a situation of limited capital. What if there were limited capital so that variable inputs could not be applied at the proper level? What if the added returns only equal the added cost?

Such a condition of limited resource availability creates a situation where resources must be rationed (Fig. 9). In John's case, the goal is to get the highest return for the given amount of resource (money) by using it in the best enterprise.

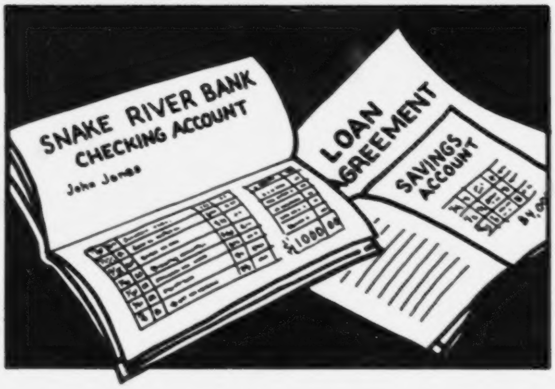


Fig. 9 — Limited Capital Means That Resources Must Be Rationed

John and his father are considering several alternatives that require capital. Let's see how they might allocate $1,000 among three alternatives. Keep in mind that the goal is to get maximum returns for the $1,000. The potential returns from the use of that capital for John and his father are shown in Table B.

John realizes that fertilizing corn pays big dividends. Also, fertilizer for soybeans, and the investment in hog operations, gives good returns. However, because the capital is limited, decisions must be made about where to apply the $100 increments of capital that are available (Fig. 10).

Table B
Returns For Investing Operating Capital

Units of Capital [$100 units]	Fertilizer for Corn [$]	Fertilizer Soybeans [$]	Finishing Hog Operation
1	500	200	300
2	400	125	300
3	300	125	300
4	250	125	250
5	250	125	150
6	125	100	125
7	100	100	100

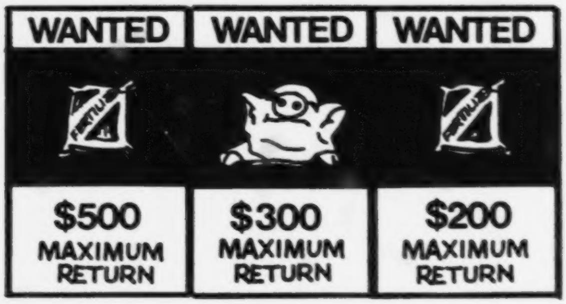


Fig. 10 — The Manager Must Decide Where To Apply Limited Capital

Table C shows that the first priority is to use the first $300.00 (three units) for fertilizing corn. The returns of the hog operation are expected to exceed any of the next best investments. Next they put three units of $100.00 into the hog operation. At this point the returns to capital from corn and hogs are equal. Six units of capital have been used. Four units still remain. The next best alternative with returns of $250.00 for the $100.00 of capital is two units in corn and one unit in hogs. This leaves an additional one unit of capital to be allocated. The next best alternative is for the purchase of fertilizer for soybeans.

In summary, $500.00 of capital is allocated to corn, $100.00 to soybeans, and $400.00 to the hog finishing enterprise. No other capital allocation yields higher returns.

Table C

Units of Capital	Corn	Soybean	Hogs
1	500	200	300
2	400		300
3	300		300
4	250		250
5	250		
Total Returns	$1700	$200	$600

INPUT-INPUT RELATIONSHIPS

Often times inputs have individual and combined impacts on the final product. For example, profit levels among farmers can be due to the fact that inputs were not combined in a least cost manner to produce a given level of output (Fig. 11).

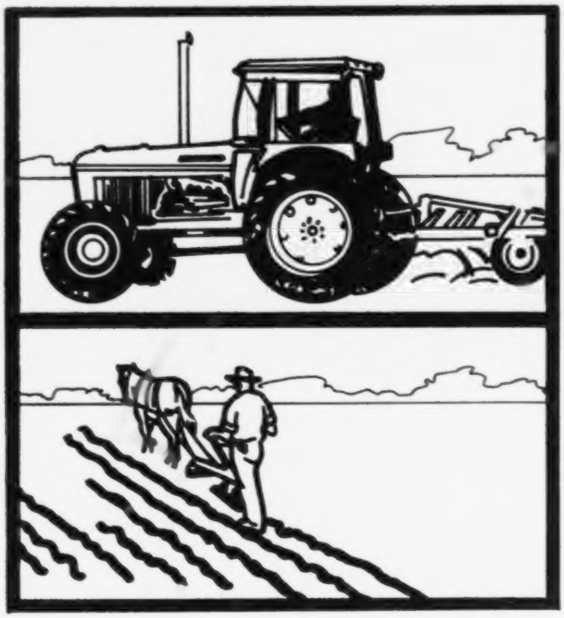


Fig. 11 —Variation In Profit Levels May Only Mean Poor Input Planning

John's father also has asked him to be a part of the hog enterprise in the family farm. Because of the availability of John's labor in exchange for the use of his machinery, John's dad plans to expand the swine enterprise.

John has worked with least cost ration formulas in his study of animal nutrition. He finds that farmers in his area have fed wheat when prices were favorable (wheat has a value of about 112% of corn).

John also discovers that there is a trade-off or substitution of corn and soybean oil meal in the production of 100 pounds of grain for 60 pounds of hogs. This is the weight of pigs that are usually purchased for the finishing floor. These two rations are cheap and readily available. John shares this information with his father and goes through the details of finding the least cost ration formulation of these two main feed ingredients (Fig. 12).

Fig. 12 — John Must Decide Which One Will Produce The Most Profit

THE LEAST COST RATION FORMULA

There are two methods that can be used to determine the least cost ration formulation:

- Graphics
- Mathematical

THE GRAPHIC APPROACH

John takes the information found in Table D and plots it on graph paper (Fig. 13). The "same production" line occurs when all points are connected into a line segment. The line shows the combination of soybean oil meal and corn for 100 pounds of gain for the pigs.

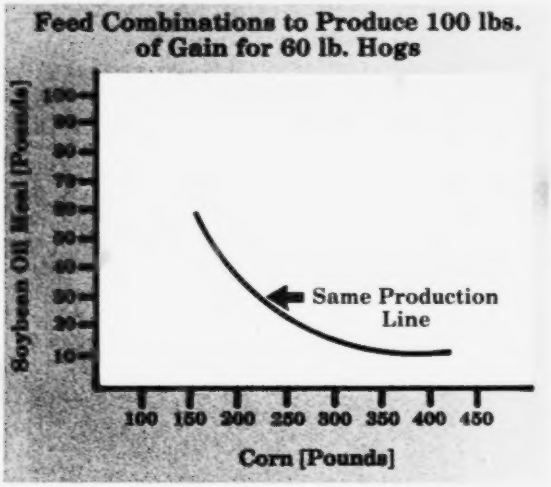


Fig. 13 — John Plots His Feed Combinations

John's dad wants the least combination of the two feedstuffs that will produce maximum profit. To do this, John combines market or price information with the physical feed conversion information (the same production line).

Corn is selling for $.05 per pound and soybean oil meal for $.13 per pound. John puts this on a graph in a usable form. John calculates a same ration cost line by assuming he has $5.00 to buy the two feedstuffs. Five dollars will buy 100 (Point A) pounds of corn or 38.97 pounds of soybean oil meal (Point B). John plots these two points (Fig. 14). He connects the two points with a straight edge and gets a $5.00 same ration cost line. Any point on this line gives a combination of soybean oil meal and corn that costs $5.00.

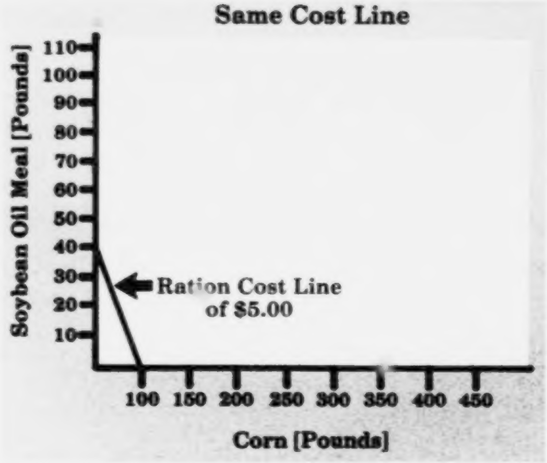


Fig. 14 — John Plots The Same Ration Cost Line

John now combines the two bits of information (the same ration cost line and the same production line) (Fig. 15). To find the least cost combination of the two feedstuffs, John moves the same ration cost line in a parallel manner until it just touches the same production line. This is point C. It is the least cost combination. This point is about at the point of ration 7 (40 pounds of soybean oil meal and 195 pounds of corn) (Table D).

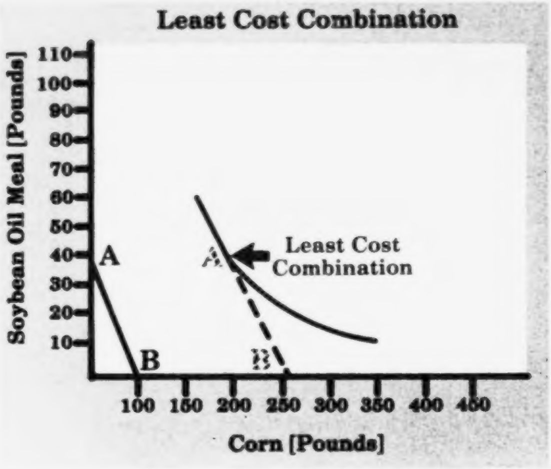


Fig. 15 — John Moves Line A, B Parallel To Find The Least Cost Combination

Table D

Feed Combinations to Produce 100 lbs. of Gain for 60 lb. Hogs

Ration Number	Soybean Oil Meal	Corn
(1)	10	421.7
(2)	15	336.5
(3)	20	286.7
(4)	25	253.1
(5)	30	228.7
(6)	35	209.8
(7)	40	194.8
(8)	45	182.4
(9)	50	172.0
(10)	55	163.1
(11)	60	155.4

In summary, let's trace back through the steps that John followed:

1. Identify the same production line. This is generally determined from research information.

2. Determine the same ration cost line. Take a given amount of money and divide by the cost per pound of the feedstuff. This gives the quantity that a given amount of money will purchase. Do the same for the other feedstuff. This gives the amount of the feedstuff if all money is spent on it. A second point, point B, is now determined. Connect points A and B with a straight edge. This is the same ration cost line.

3. To determine the least cost combination, move the same cost line parallel to itself until it touches the same production line at one point only.

MATHEMATICAL APPROACH
This approach is less time consuming than the graph approach (Fig. 16). The first step is to find the rate at which one input substitutes for another along the same production line. This rate is referred to as the marginal rate of substitution.

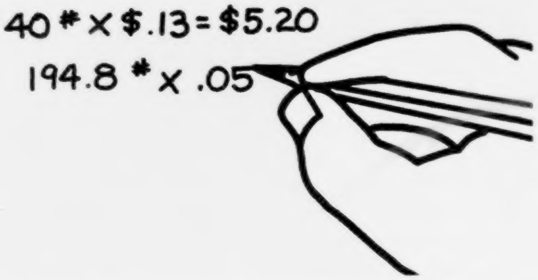


Fig. 16 — Mathematics Is A Faster Way To Determine The Least Cost Ration Formulation

To calculate, divide the change in one input by the change of the other input among different rations. Table E shows this first step. Note that soybean oil meal changes from ration to ration in 5 pound increments. Corn requirements among the different rations changes at varying rates.

The math formula for the least cost ration (where the same cost ration line hits the same line) is the ratio of:

$$\frac{\text{change in corn}}{\text{change in soybean oil meal}} = \frac{\text{price of soybean oil meal}}{\text{price of corn}}$$

The price ratio is constant among all rations at a value of 2.6 ($.13 divided by $.05).

To find the least cost ration one merely moves down the rations until the marginal rate of substitution ratio equals the relative price ratio in the above formula. They are not exactly equal at 2.6 at any one ration, **but** they would be equal at approximately the 7 ration at 3.00 of the marginal Rate of Substitution. So to check which ration number is most cost efficient and to check his computations, John merely computes the cost of each ration:

Ration 6: 35 # × $.13 = $ 4.55
209.8 # × $.05 = $10.49
$15.04 total ration cost

Ration 7: 40 # × $.13 = $ 5.20
194.8 # × $.05 = $ 9.74
$14.94 total ration cost

Ration 8: 45 # × $.13 = $ 5.85
182.4 # × $.05 = $ 9.12
$14.97 total ration cost

John finds that ration 7 is the least cost, but only by a margin of $.03 ($14.97 - $14.94).

In summary, to use the math approach you must:

1. Determine the rate that one input substitutes for another. This is the marginal rate of substitution.

2. Compute the price ratio. This should be the price at the point of use. In John's case it is the family farm.

3. Find the ration for which the two rations are equal. This is the least cost combination of the two inputs.

Table E

Ration No.	X_1 Soybean Oil Meal [lbs]	Change	X_2 Corn [lbs]	Change	Marginal Rate Substitute: [Change in Corn ÷ Change in Soybean Oil Meal]
1	10		421.7		
		5		85.2	
2	15		336.5		17.04
		5		49.8	
3	20		286.7		9.96
		5		33.6	
4	25		253.1		6.72
		5		24.4	
5	30		228.7		4.88
		5		18.9	
6	35		209.8		3.78
		5		15.0	
7	40		194.8		3.00
		5		12.4	
8	45		182.4		2.48
		5		10.4	
9	50		172.0		2.08
		5		8.9	
10	55		163.1		1.78
		5		7.7	
11	60		155.4		1.54

CASH FLOW ANALYSIS

CHAPTER 6

THE CASH FLOW PROJECTION

Rod Young, who is requesting a loan for the first time in Chapter 3, prepares the net worth and income statements that are requested by Mr. Hatchell, his lender. He again visits the lending institution. Mr. Hatchell reviews the statements and says that Rod's operation is solvent and that he is able to pay his short term debts. The income statements show an adequate net farm income. The rate of return on capital is acceptable for Rod's type of operation.

Mr. Hatchell tells Rod that he is willing to propose a loan to the loan committee that will cover Rod's operating expenses and other capital requirements. Mr. Hatchell then asks, "How much total capital will you need through the year? What will be your peak borrowing periods? When will I be able to expect a payback (Fig.1)?" Rod is not quite sure how to answer Mr. Hatchell. Rod decides that since Mr. Hatchell helps him develop net worth and income statements that maybe he is willing to help him answer these questions. Rod says, "I know there is a net worth and income statement that I can use to evaluate the annual health of the farm business. Is there something that I can use to evaluate the progress of my business through the year?"

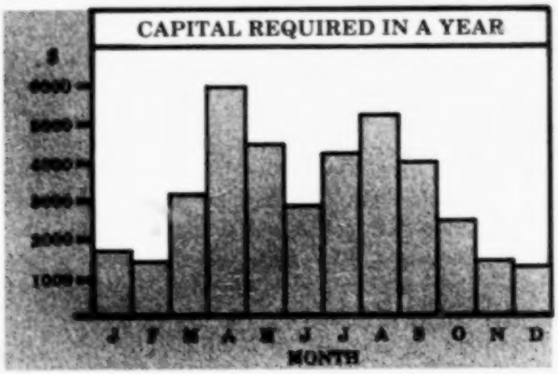


Fig. 1 — Rod Will Need Different Amounts Of Capital Throughout The Year

Mr. Hatchell says that there is an excellent framework that is used for evaluating the cash flow of a business. He tells Rod that his customers must provide not only a summary of the cash flow from the previous year but what is expected for the next twelve months. The financial results of Rod's farm business for the previous year is called a cash flow summary. A cash flow projection shows what may happen in the next year.

CASH FLOW PREDICTIONS

You are introduced to cash flow analysis in Chapter 5. A cash flow **summary** (see Chapter 2) is the actual result of expenses and receipts incurred during the year. A cash flow summary contains the financial history of your business transactions for a given time period; this is usually a year.

The cash flow **projection** deals with the future plan of all of your money transactions for a specific time. This also is usually a year. It can be planned in days, months, or quarters. Generally it is conducted on a monthly basis. In this chapter we will primarily deal with the projected cash flow that is done on a monthly basis for the next twelve months.

Cash flow planning has become an increasingly valuable tool that allows the manager to evaluate the health of a farm or ranch business. Increased amounts of capital are required to operate these businesses today. This increase is brought about by new technology, substitutions of machinery for labor, inflation, and consolidation (Fig. 2). This trend also increases the debt load of the individual farm and causes a greater amount of risks to be assumed by the operator and the lending institution that provides capital.

Fig. 2 — It Takes Increasing Amounts Of Capital To Manage A Farm Or Ranch

A cash flow plan is a recorded projection of the amount and timing of all cash inflows (dollars available) and cash outflows (dollars used) that are expected to occur throughout the planning period (Fig. 3).

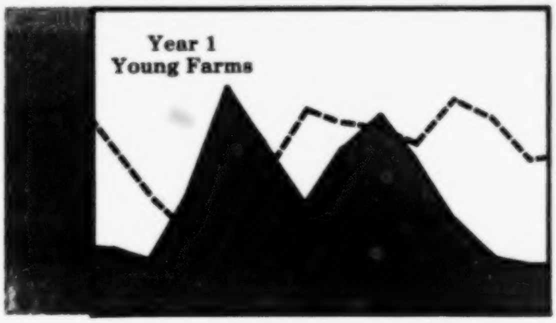


Fig. 3 — A Cash Flow Plan Compares All Inflows And Outflows

WHY MAKE A CASH FLOW PROJECTION?

A cash flow projection enables you to compare projected dollar flows to those that actually happened the previous year. When the two cash flow statements (summary of actual and projected or planned) do not agree, you must analyze the differences and change your course of action. Differences between these cash flow statements show in the total farm or business operation that must be examined.

The cash flow plan forces you to make detailed production plans. For example:

1. What enterprises will I produce next year?

2. How much of each enterprise will I produce?

3. What production techniques will I use for each enterprise?

4. What are the likely prices that I will receive for the products of each enterprise?

5. When will I market those products?

6. When will I pay for my variable inputs?

7. How much money must I get approval for from my lender to meet my capital requirements? How much and when must I borrow money for production expenses. When will I need to borrow for new capital investments? When will I be able to repay the loan?

8. Am I living within my family budget?

The answers to these questions help you make very important management decisions for your farming or ranching operation. Also, such information lets you communicate your credit needs and your loan repayment ability (debt service) to a possible lender. Your marketing strategy and when you will repay the borrowed money is the kind of information that a lender relies on to determine your ability or capacity to repay a loan. In short, this information lets you and your lender work together as a team through good and bad farm and ranch economic situations (Fig. 4).

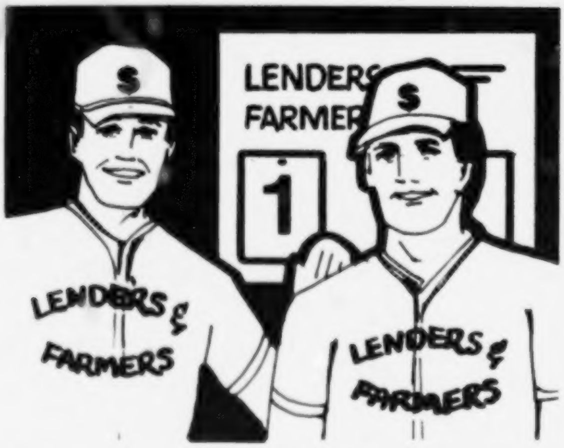


Fig. 4 — Cash Flow Statements Let You And Your Lender Work As A Team

ADVANTAGES OF CASH FLOW PROJECTIONS

Cash flow projections provide a number of advantages to the farm or ranch business.

- It shows the operator when excess cash will be available, and when cash deficits will occur.
- It provides for budgeted loans that are borrowed only for the periods through which they are required.
- It provides a technique for combining personal and farm or ranch financial needs for the next period. It reduces the effect of family living expenses on the budget.
- It lets you plan purchases to get the best price.
- It allows comparison of the cash flow projection with the cash flow summary to record actual performance against the advanced planning that was done.
- It helps you evaluate the relationship of your short term debt to your repayment capacity.
- It lets the manager immediately see the cash position throughout the year. A cash flow projection helps determine when cash will be required for production expenses, when major capital investments will be made, and how they will be financed. The plan indicates whether investments can be paid for with cash on hand or if it is necessary to borrow funds. When money is borrowed the plan indicates whether or not there will be adequate cash to meet the repayment terms of the lender at a specified time. If the terms are met, repayment schedules are set up to coincide with cash surplus months. If not, some revisions in the plan are necessary.

DISADVANTAGES OF CASH FLOW PROJECTIONS

There are a few disadvantages that must be dealt with when you work on the cash flow projection.

- The farm or ranch manager must devote a large amount of time to the collecting and projecting of data.
- Future prices, due to inflation, supply and demand, and yield and weather are difficult to estimate.
- Borrowing rates may fluctuate.
- Family and business consumption of resources may vary.
- Inventories constantly change.
- The entire cash flow projection plan needs constant review and revision.

Expect and be prepared to deal with these disadvantages while you work. Remember, make a decision with the best data available as your guide, and be ready to accept the risk (Fig. 5).

Fig. 5 — Be Ready To Deal With The Disadvantages Of A Cash Flow Projection

CASH FLOW COMPONENTS

A cash flow indicates the ability of a business to generate cash inflows and outflows and therefore should include all sources of cash inflow and of cash outflow. Cash inflows include:

- All sales from various enterprise activities
- Government payments
- Other farm income
- Sale of capital items
- Withdrawals from savings
- Off farm earnings
- Other investments

Cash outflows are:

- All cash expenses for input purchases (fertilizer, chemicals, feed supplies)
- Both personal income and real estate taxes
- Other expense items such as insurance, utilities, rents, leases, freight, and trucking
- Capital purchases (breeding stock, equipment, land)
- Principal payments on loans
- Interest payments on loans
- Family living
- Investments

THE LAYOUT OF A CASH FLOW STATEMENT

Table A is a typical layout for a cash flow statement. It shows the categories of receipts and expenses that are considered. It shows you what to add and subtract in order to create a summary of your cash flow needs over a one-year period.

CASH

☐ Business
☒ Consolidated

TABLE A

PERIOD	JAN
OPERATING RECEIPTS	
1. Livestock Sales: a. Cattle	
2. b. Hogs	
3. Sales of Livestock Purchased for Resale	
4. Crop Sales: a. Corn	
5. b.	
6. Government Payments	
7. Other Farm Income	
8.	
9. Total Cash Operating Receipts	
CAPITAL SALES	
10. Breeding Livestock	
11. Machinery, Equipment	
12. Buildings, Land	
OTHER INFLOWS	
13. Wages and Salaries	
14. Investments	
15. Non - Farm Receipts	800
16. Total Cash Inflow (9 + 10 thru 15)	800
OPERATING EXPENSES	
17. Hired Labor	
18. Repairs: Machinery and Equipment	122
19. Buildings and Fences	
20. Feed	2000
21. Seeds, Plants	
22. Fertilizer, Lime, Chemicals	
23. Machine Hire	
24. Supplies	
25. Vet. Medicine, Breeding Fees	110
26. Fuel, Oil, Lubricants	381
27. Storage, Warehousing	
28. Taxes (Real Estate and Personal Property)	
29. Insurance (Property, Liability, Crop)	
30. Utilities	200
31. Rents, Leases	
32. Freight, Trucking	
33. Miscellaneous	
34. Truck and Auto Expense	92
35. Livestock Purchased for Resale	
36. Total Cash Operating Expenses	2905
CAPITAL EXPENSES	
37. Breeding Livestock	
38. Machinery, Equipment	
39. Buildings, Fences, Land	
OTHER OUTFLOWS	
40. Family Living	800
41. Income Tax and Self Employment	
42. Investments	
43.	
Scheduled Debt Payments	
44. Intermediate: interest	
45. principal	
46. Long Term: interest	
47. principal	
48. Total Cash Outflows (36 + 37 thru 47)	3705
CASH FLOW SUMMARY	
49. Beginning Cash Balance	3000
50. Inflows - Outflows (16 - 48)	-2905
51. Cash Position (49 + 50)	95
52. New Borrowing: Operating	-0-
53. New Borrowing: Intermediate and Long Term	
54. Interest Payments on Operating Loan	
55. Principal Payments on Operating Loan	-0-
56. Ending Cash Balance	95
DEBT OUTSTANDING	
57. Operating Prin. Int. 15 %	
58. Intermediate Prin.	5700
59. Long Term Prin.	128952

Cooperative Extension Service • Division of Agriculture • Oklahoma State University

* Purchase new tractor with

** Purchased new machine shed

FLOW PROJECTION

Name: Young Farms

☒Projected for 19__

Date completed ________

FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC			TOTALS
								5325				1.	5325
	16525						16525					2.	33050
												3.	
									56000			4.	56000
												5.	
												6.	
												7.	
												8.	
	16525						16525	5325	56000			9.	94375
			2250				1375					10.	3625
												11.	
												12.	
												13.	
												14.	
800	800	800	800	800	800	800	800	800	800	800		15.	9600
800	17325	800	3050	800	800	800	18700	6125	56800	800		16.	107600
												17.	
	50	85		412		65		50				18.	784
150		322		74		71	65	141	128			19.	951
2100	2090	2050	2130	1950	2120	1900	2100	2165	2230	2165		20.	25000
3200				800								21.	4000
3700	4000	3400		3000								22.	14100
												23.	
												24.	
75		100		126		90			96	178		25.	775
800	900	800	700	617	650	675	600	700	500	360		26.	7683
												27.	
												28.	
		420					220					29.	640
200	200	200	200	200	200	200	200	200	200	200		30.	2400
												31.	
												32.	
464	210		160	188		380	174		300			33.	1876
103	50	160	90	106	50	162	50	50	152	50		34.	1115
												35.	
10792	7600	7537	3280	7473	3020	3543	3409	3306	3606	2953		36.	59324
												37.	
												38.	
												39.	
800	800	800	800	800	800	800	800	800	800	800		40.	9600
												41.	
												42.	
												43.	
												44.	-0-
2796												45.	2796
	4200									14336		46.	18536
										15462		47.	15462
14388	12500	8337	4080	8273	3820	4343	4209	4106	4406	33551		48.	105718
95	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	35439		49.	3000
-13588	4825	-7537	-1030	-7473	-3020	-3543	14491	2019	52394	-32751		50.	1882
-13493	4825	-7537	-1030	-7473	-3020	-3543	14491	2019	52394	2688		51.	4882
13493	-0-	7537	1030	7473	3020	3543	-0-	-0-	-0-	-0-		52.	-0-
		22557*		20023**								53.	-0-
	168	-0-	-0-	-0-	-0-	-0-	1585	232	209	-0-		54.	2194
-0-	4657	-0-	-0-	-0-	-0-	-0-	12906	1787	16746	-0-		55.	-0-
-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	35439	2688		56.	2688
13493	8836	16473	17403	24876	27896	31439	18533	16746	-0-	-0-		57.	-0-
2904	2904	25461	25461	25461	25461	25461	25461	25461	25461	25461		58.	25461
128952	128962	128962	128962	148975	148975	148975	148975	148975	148975	133513		59.	133513

Supplement to FS-751 0783

cash difference of $22,557. First payment is due 12 months after purchase.
for $20,023 with first payment due 12 months later.

CONSTRUCTION OF THE CASH FLOW

After Mr. Hatchell explains cash flow summaries and projections, Rod agrees that a cash flow analysis is very useful. It allows him to see how the complete financial picture of the farm business looks over the next twelve months. He is still a little unsure about how to construct the cash flow. He says, "The form doesn't look that difficult, but where do I get the data to construct the numbers needed to analyze my financial situation?"

Mr. Hatchell explains that there are some basic steps that should be followed when a cash flow projection is constructed. These six steps include (Fig. 6):

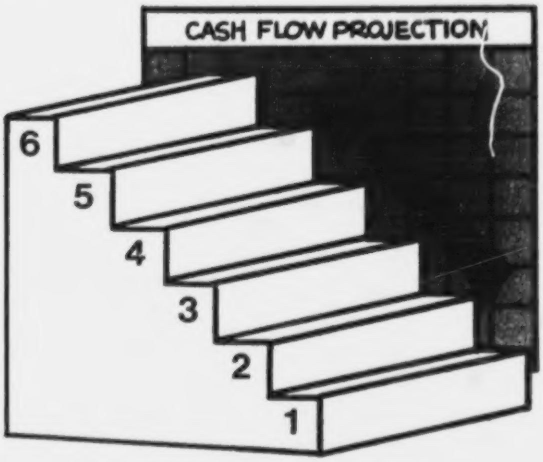


Fig. 6 — There Are Six Steps To Cash Flow Projection

- Plan your crop and livestock enterprise

  Decide what crops and what livestock enterprises will be included with your operation. Decide on the technology that will be used, and the operating inputs that will be required to use that technology. Decide what machinery operations will be done. Calculate your variable costs and your fixed costs for those enterprises.

- Estimate your monthly enterprise variable expenses.

  You develop your plan for enterprises for a year in Step 1. You must now estimate when the variable inputs will be needed, and when the machinery operations will be done. You also must estimate the cost of these items. You must now decide when the products will be sold and project the future prices that you will receive. When you develop this information you will have an estimated monthly flow of income and expenses for the enterprises that you expect to complete.

- Estimate the purchase and sale prices and times of sale for capital items.

  You should decide such things as when you will trade tractors, when you will need funds to construct a new barn, when you will need funds to purchase a new bull, or when you will trade pickups. Include these items in the cash flow projection according to when they will occur and the funds that will be received from the transaction.

- Estimate nonfarm earnings.

  Nonfarm earnings include wages and salaries earned off the farm. They also include income from investments such as interest income, royalty income, or even expected inheritances. Such earnings are included in the month that they are expected to occur.

- Estimate your family living expenses and taxes.

  Family living expenses are estimated according to what is planned for the family. If vacations are planned, then the cost of those vacations must be included in the month that they will occur (Fig. 7). Holidays that require additional expenses should also be considered and planned for. Taxes should be estimated and planned for at the time they are paid.

Fig. 7 — Family Expenses Like Vacations, Are Important Parts Of Cash Flow Analysis

- Determine scheduled debt payments.

  Payments of both principal and interest that are due on loans already encumbered should be recorded in the month in which they will occur. This insures that your projection does include a payment for these commitments. It allows you to determine if cash flow is available.

The cash flow summary of the previous year is now useful. If you have the same enterprise combinations as the previous year, you will have something to compare your cash flow projection with. You can make some adjustments for expected prices to be paid and prices to be received depending upon the actual cost of the previous year.

If enterprise combinations will change, or if no cash flow summary is available, then other sources must be used. Rod does not have a cash flow summary for last year. Rod must rely on enterprise budgets that he must complete for the next year. He will use this information to complete his projected costs.

The cash flow projection in Table A is the projection that Rod develops for Young Farms.

Rod decides that his farm plan will be made up of thirty sows (farrow to finish), twenty-five beef cows, seventy-five acres of pasture, twenty-five acres of alfalfa, and two hundred acres of corn (Fig. 8). The actual recording of receipts is determined by the production cycle (when it is produced) and a marketing plan. After the marketing plan is decided, the actual cash flow entries are mechanical. This also holds for production expenses from the enterprise budgets. Rod then determines when the resources or inputs are needed, and then decides when to purchase them. He also projects the appropriate month and records when cash will be available to purchase them.

Nonfarm receipts and family living expenses must also be estimated for the period for which the cash flow projection will cover. Nonfarm receipts should include wages, investments, and other money that is earned outside the farm operation. Rod has estimated that his nonfarm receipts will be $800 per month through the next twelve months. Family living is also included on line 40 of the cash flow form. He estimates that the family living expenses will be $800 per month.

Fig. 8 — Rod Must Decide A Marketing Strategy

The cash flow form in Table A shows 59 lines that must be completed to make a cash flow. Lines 1 through 16 represent total cash inflows while 17 through 39 represent operating and capital expense items. Other outflows are included in lines 40 through 47. Lines 49 through 59 are used to calculate the cash flow through the period that is being considered.

From his research, Rod knows that there are many types of cash flow projection tables. He feels most comfortable with this one (Fig. 9).

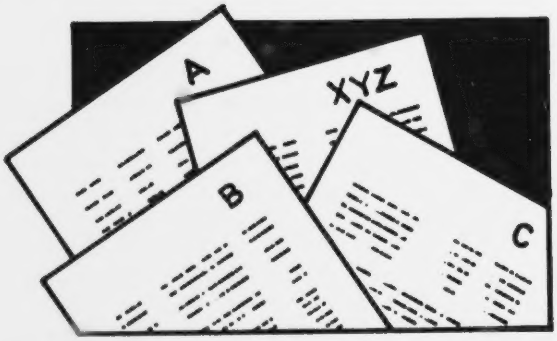


Fig. 9 — There Are Many Types Of Cash Flow Projection Tables

ANALYSIS OF CASH FLOWS

The major points of the cash flow in Table A are highlighted by lines 16 (total cash inflow), line 48 (total cash outflows) and lines 49 through 59. In calculating the cash flows in those rows a beginning cash balance is considered and is added to the result of the inflows minus the outflows. This obtains the cash position. If the cash position is positive there will be no new borrowing for operating in that month. If the amount in line 51 is positive and is greater than a minimum cash balance that may be required, then there could be a payment on the operating loan on line 55. The ending cash balance is the result of subtracting line 51 minus any payments on the operating loan or principal and interest payments on the operating loan. The ending cash balance, line 56, is then carried to the next month beginning cash balance.

The process is recalculated for that month. Any amount that is borrowed in line 52 for that month is then added to the value that is shown in the operating principal row, line 57, of the previous month. This obtains the value for that month of operating principal. This table then shows the results of the net flows by month in line 50, the net cash position by month in line 51, and new borrowings line 52, or payments in line 54 and 55. The amount of debt outstanding is shown in lines 57, 58 and 59.

If payments on previously committed debt are made in the upper section of the cash flow (lines 40 through 47) then the intermediate in long term principals shown in lines 58 and 59 should be adjusted accordingly. New purchases of intermediate or long-term assets through either cash payments or use of debt, should be reported in the cash flow. Cash payments should be entered on lines 37 to 39 while debt committments should be added to lines 58 or 59.

What major points does Rod's cash flow plan show?

- Rod's positive cash balance of $3,000 (line 49) in January that is available from the previous month will enable him to cover the negative cash difference of $2,905 in January (line 50).

- February through August are months in which there are heavy cash demands for operating expenses. This couples with other previous credit needs to show his total credit line needs. He needs to establish with his banker a credit line of about $31,439. See line 57 for the details of the monthly requirements. This limit is found in August because this is the largest amount of operating capital that is required on a monthly basis.

- By November he generates earnings sufficient (cash balance of $35,439 shown in line 56) to cover his large principal and interest payments on land in December. This is the remaining balance after repayment of the operating loan and all of the interest due is paid. He still ends up with $2,688 in his checking account.

- Note that his sales are sufficient to pay off all of the loans incurred throughout the year plus continued payments on the existing long term debt.

- It should be noted, however, that he begins the year with a cash balance of $3,000. He ends with a cash balance of $2,688. He has an increase in intermediate debt and an increase in long term debt. His analysis, if it is correct, shows that he can repay the debt commitments and expense items that were listed in the cash flow projection. It does not, however, give any indication into the health of the farm business. This is determined from the net worth and income statement. He has not considered any of the noncash costs that are associated with the farm business. He must analyze them to see if there are returns available to cover those opportunity costs.

COMPARISONS WITH CASH FLOW SUMMARIES

There is much information in cash flow projections. There can be comparisons made between a cash flow summary and a cash flow projection for the same period. This information helps you evaluate your estimation of expenses or incomes in the cash flow projections. A comparison between the two over a period of time can give you an estimate of adjustments that need to be made to make the cash flow more accurate. A comparison of cash flow summaries over several years can show if the cash position of the farm is improving or deteriorating (Fig. 10).

Fig. 10 — A Comparison Of Cash Flows Shows If The Business Is Improving Or Deteriorating

The amount of short term debt that is committed to the farm operation is another indicator that can give you a feel for the direction that the farm business is moving. An increase in farm debt, both on short term as well as intermediate and long term debt without increases in cash position, indicates that the farm may be using asset values in a production process which does not give a return adequate to repay the cost.

Caution should be exhibited in using only a cash flow summary or projection in deciding the health of a farm business. A cash flow projection only can tell a manager if the returns will repay current or future debts. Analysis of the health of the farm business should really combine the use of an income statement and net worth statement and cash flows.

SUMMARY

Cash flow projections and summaries are another tool that the farm or ranch manager can use to analyze trends of a farm business. A cash flow summary looks in depth at what has happened in the past. A projection estimates what is expected to happen. Both can be compared to create a realistic view of what the cash flow of a business might be.

A standardized form of cash flow allows a manager to analyze a net cash position, borrowing requirements for short term, intermediate term, and long term. It provides information that can be used to establish a line of credit necessary to the farm business through a lending institution.

A cash flow projection requires planning and helps make decisions that affect the direction that the farm business will go. Any deviation from what is scheduled in a cash flow projection is analyzed and explained to the satisfaction of both the manager and lender. Such deviations can be a hint that problems are going to occur at some point in the future.

In summarizing Rod's position, Mr. Hatchell tells him that he will lend him the amount necessary to operate throughout the next year. Mr. Hatchell establishes a line of credit for $32,000 that is available for Rod to use over this period (Fig. 11). However, Mr. Hatchell does feel that the operation may be in a static situation over the next year. His comment is based on an analysis of the cash flow position going in and coming out of next year. It also is based on the variation that occurs in the receipts, expenses, and debt situation. He recommends that Rod look at alternatives, both in terms of enterprises, and in terms of the technology used, to produce his products. He tells Rod to evaluate other enterprise combinations to see if there are more profitable operations.

Fig. 11 — Mr. Hatchell Agrees To Rod's Loan

Once a cash flow is developed, it must be constantly evaluated and updated. It is good practice to continually evaluate the cash flow, and see what alternative technologies or procedures will earn higher returns. If necessary adjustments can be made in the operation. A cash flow should be dynamic throughout the year rather than static. Always remember a cash flow is only as good as the reliability of the numbers that are used by the manager to construct it.

MARKETING

CHAPTER 7

THE FOUR TYPES OF DECISIONS

The farm and ranch manager must make many daily decisions. They know that decisions about labor, production, and capital must be made to keep the business enterprises working smoothly. Yet these decisions may not be enough to keep their agribusiness **profitable** in our economic environment. The efficient manager also uses marketing strategy in their everyday thinking.

You must develop an overall plan that allows you to sell your product at the best possible price. In the past, managers could afford to ignore marketing trends and concentrate on production, labor, and capital. They could offset their market losses by working hard and growing or raising more products.

This attitude often results in high yields that must be sold as soon as they are produced without regard to market prices. Today, the farm or ranch manager who does not consider all of their market **options** may not be able to offset their losses by overproduction. A market strategy must be developed when production, capital, and labor decisions are made (Fig. 1).

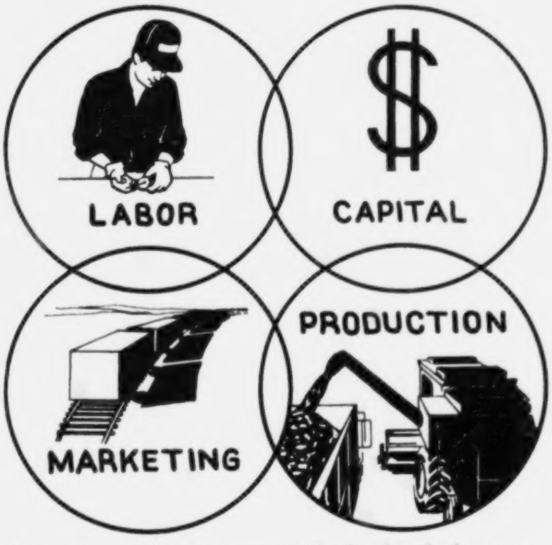


Fig. 1 — A market strategy must be developed when production, capital, and labor decisions are made.

Fig. 2 — The wise manager knows that the market prices can fluctuate.

The wise manager knows that the market prices can fluctuate like the weather (Fig. 2). This creates options that can either help or hinder their profit margins. A farmer or rancher who has a good marketing strategy:

- Produces the quality of product that has the greatest profit potential
- Tries to deliver the product at the most profitable time

Before you begin your enterprise, you must plan a marketing strategy that includes your cash flow data and your investment analysis. In order to have some control over the market, you must know **your** economic strength, weakness, and marketing ability.

WHAT IS THE MARKETING CONCEPT?

A market is negotiable trade between buyers (consumers) and sellers (producers). Farmers and ranchers make transactions in two basic kinds of markets:

- Input markets
- Product markets

In the input market farmers and ranchers buy items such as seed, feed, fertilizer, fuel, machinery, lumber, repair parts, and pesticides to produce their products.

The product market provides cash for the farm business through the sale of the final product such as grain, milk, beef, poultry, fruit and vegetables.

Many definitions of marketing exist, but they all contain common threads. Marketing is a combination of all the decisions that are made about price, timing, and method of sale in both the input and product markets. Marketing may be further defined as all of the processes and services involved in moving a commodity from the producer to the ultimate consumer.

Good marketing skills coordinate what is supplied with what is demanded by the consumer. In summary, marketing is the effort that bridges the gap between the producer and the consumer (Fig. 3).

Fig. 3 — Marketing Bridges The Gap Between The Producer And Consumer

HOW IS VALUE ESTABLISHED?

To understand the marketplace and marketing, you must first understand the foundation of marketing. This is the concept of trade. Scarcity is a relationship between the amount of goods available and the value that people place on it.

For example, people pay more for lobster in Kansas than they pay in Maine, because lobsters must be transported to Kansas.

A story about a group of castaways on an island where coconuts grow on the west end and wild pigs on the east end shows how people place value on items. The castaways split into two groups. One group of castaways monopolizes the coconut end of the island and the other group monopolizes the wild pig end. They trade wild pigs for coconuts and vice versa (Fig. 4). On the coconut end, coconuts have little value because there are plenty. On the wild pig end, wild pigs have little value because there are plenty.

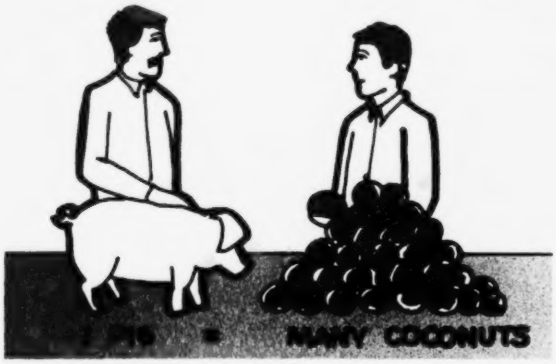


Fig. 4 — In Trade, Scarcity Creates Value

The east end specializes in wild pig production and catching, and the west end specializes in coconut production and picking.

A healthy trade develops between the east and west end of the island. The trade increases the value of the pigs in the pig-rich East, and increases the value of coconuts in the coconut-rich west. Trade increases value.

The west-end castaways discover that wild pigs like coconuts, and they began to raise their own pigs. With both pigs and coconuts, the west does not need to trade with the east. The east-end's economy is crushed.

Then one day an easterner discovers a vein of gold. The westerners want these gold nuggets. They are willing to sell pigs and coconuts at low prices to get the gold. As a matter of fact, they are so taken by the gold that they spend all of their time fashioning jewelry in order to display the gold. With no time to grow pigs, they let the easterners raise the pigs for them.

The westerners still have an advantage in the production of coconuts. The easterners now have an advantage in gold production. Trade is again restored. Trade restored the pig production to the east because the westerners preferred to spend their time in gold trading. This gives the easterners a comparative advantage in wild pig production.

Trade develops through the changing of values (preferring to trade in gold, rather than raise pigs). Trade makes it possible for one person or group to specialize in one type of production, and trade for others (pigs, coconuts, gold). Each person adds to the value of the products they acquire, because no one willingly trades unless they gain a personal advantage. Both traders gain and total value increases. Products acquire value through trade.

MARKET DEVELOPMENT

The economic history of the United States, from colonial times to the present, demonstrates a pattern of change which many people claim is typical of the development of market economies. In the earliest stages, households produced most of the goods and services consumed. Household members built their own houses, produced their own food and clothing, and cared for their ill. Trade was limited. Most of the resources of the economy, particularly labor, were devoted to the procurement of food, clothing, and shelter. Agricultural production like raising crops and domesticated animals and hunting and fishing were the dominant activities of every household.

The growth of our country abounds with examples of changes in trading patterns. The early settlers in the West wanted goods from other areas. They needed guns, seeds, tools, salt, and other necessities. They trapped for furs, grew tobacco, corn, and cotton and produced other exportable items. They traded these to get their necessities. A market developed in a natural way. There was agreement to trade, and a location established in order to carry out the trading.

Markets are agreements among people, such as auctioneers, peddlers, shipowners, and tradespeople (Fig. 5). A market is a place where buying, selling, or trading can take place. Market prices depend on:

- The situation at a given location
- A given time for a given quality
- A specified form of a particular commodity

Fig. 5 — Markets Are Agreements Between People

Some tradespeople began to specialize. Tinsmiths, gun makers, candle makers, tanners, drovesmen, ferryboat operators, and lawyers developed as soon as there was enough business. All traded their services to provide themselves with their needs.

As they moved further West, settlers did not necessarily produce at a lower cost than they did back East. An ironmaker in Philadelphia could raise pigs cheaper than an Ohio settler. The ironmaker chose to make tools because a larger profit could be made when they were sold to the Ohio settler. The Ohio settler could then raise hogs for a profit. The market was born out of this specialization and trade. Both markets were a contact between the producer and consumer.

During the California Gold Rush, a head of lettuce was as valuable as a gold nugget. No lettuce was shipped out of the state. Now lettuce from California is "relatively" inexpensive. Californians have specialized in lettuce growing. They have made tremendous investments in water projects, railroads, highways, and labor development. The Californians have a comparative market advantage today. However, if laborers force higher wages, if the farmers are forced to buy expensive technology, or if water costs increase, the comparative advantage may shift to some other area. If it shifts a market will develop between the new location and the buyers.

FUNCTIONS OF MARKETING

There are two general functions of marketing.

- Tangible
- Intangible

Tangible functions (Fig. 6) add value to the final product by physically changing the form, place, time, or possession of the product. Tangible functions include:

- Processing, grading, and packing
- Transporting and distributing
- Storing and allocating
- Buying and selling

Fig. 6 — Tangible Functions Help Process, Transport, Package, Or Sell The Product

The intangible functions associated with customer preference affect the production and the physical marketing of the product. These functions give the consumers what they want, where they want it, and when they want it.

Intangible functions include:

- Pricing
- Financing
- Risk bearing
- Informing (advertising)
- Decision making

SUMMARY

Marketing is one of, and equal to, the other three basic agriculture decisions:

- Capital
- Production
- Labor

Good marketing lets a farmer or rancher:

- Produce the quality or grade of product with the greatest profit
- Deliver the product at the most profitable time

A manager must develop a marketing strategy.

Further, value is set by:

- Scarcity, or the lack of a product (the pigs and coconuts)
- Specialization in a product (lettuce)

Trade increases value. No one willingly trades unless they gain.

By following U.S. trade development, you learn how a market is:

- An agreement among people
- Situations at given locations
- Given times for given qualities of commodities in a specified form

There must be a comparative advantage (pigs and tools).

There also are two functions of marketing:

- Tangible (processing, transport)
- Intangible (finance, risk)

MARKETING EFFICIENCY

Efficient markets produce profits no larger than the minimum required to keep people in business and are not large enough to encourage others to enter the business and cause a glut.

Farmers and ranchers make more profit when they supply markets more efficiently than someone else with respect to time, place, and form. Here is how they do it:

- They store commodities when expected price increases will be more than storage costs (Fig. 7).
- They ship to one market rather than another if the price difference is greater than the transportation cost difference.
- They dry grain if the price difference between high moisture and dried grain is more than the cost of drying.

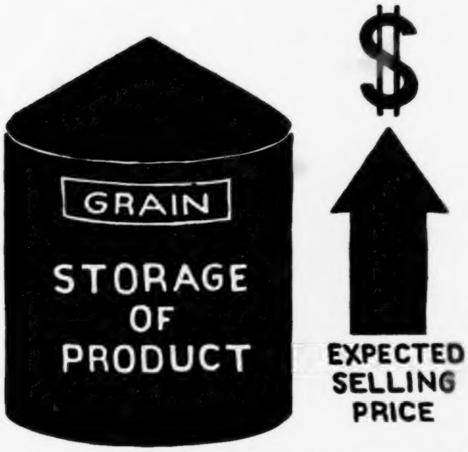


Fig. 7 — Store If Storage Costs Will Be Less Than Selling Prices

Higher profits come from doing these market functions more efficiently:

- Bargain for higher profits
- Pool products for sale
- Cooperatively own the market or process facilities

A basic understanding of marketing efficiency makes it easier for producers to recognize potential profits. Low costs alone do not mean high profits. High prices alone do not mean high profits. It is the combination of high prices and low costs that means more profits.

WHAT DETERMINES PRICE?

Simply speaking, price is a result of the interaction of the forces of supply and demand (Fig. 8). If demand increases, prices rise. If supply increases, prices fall.

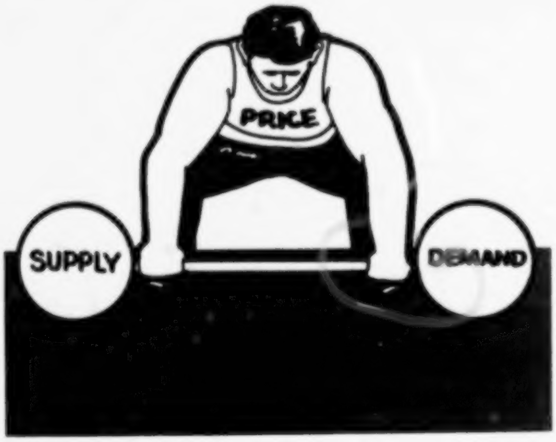


Fig. 8 — Price Is The Interaction Of The Forces Of Supply and Demand

Price is never steady. There is a market price cycle. A higher price decreases the quantity demanded (the Law of Demand) and increases the quantity supplied (the Law of Supply). A lower price increases the quantity demanded and decreases the quantity supplied. Market price moves up or down and adjusts the quantity supplied and the quantity demanded to a point where the quantity supplied is equal to the quantity demanded (equilibrium price). At this point the market is cleared, and a new cycle begins.

The economic logic of the supply and demand relationship is valid. Prices in an open market economy are always set by the interaction of supply and demand.

THE LAW OF DEMAND

Demand for a product is the amount that buyers are willing to purchase. The law of demand states that **when the price of a product is increased** with no change in factors other than price, **less product will be taken.**

Consider the logic of the law of demand with an example. How much hamburger would a typical family buy at various price levels. Of course, if prices are continually raised, the family at some point would stop buying hamburger. Further price rises would have no effect on purchases. On the other hand, if prices are continuously lowered, the family at some point would be getting all of the hamburger that they wanted. Further price decreases would have no effect on purchases. The lower the price, the more hamburger the family will buy. The higher the price, the less hamburger they will buy (assuming there are no changes in the prices of **substitute** meats). That's the law of demand.

SUMMARY:

Low price = more quantity demanded
High price = less quantity demanded

Why Does The Law of Demand Work?

There are several reasons why the law of demand works. Satisfaction is a big one. If you consume more and more of a product, such as hamburger, each additional unit gives less satisfaction. It becomes worth less and less to you. Ken Johnson usually buys a $1.00 hot dog for lunch and is satisfied. The seller wants to sell him a second hot dog. To do it the seller must give something. The seller must create a market. The seller drops the price to $.75 and Ken buys another hot dog (Fig. 9).

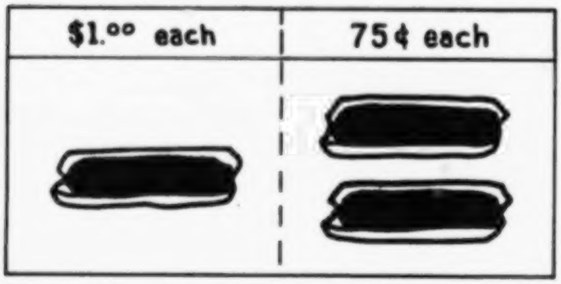


Fig. 9 — There Is Less Demand For Two Hot Dogs Until The Price Is Reduced

At some lower price level, Ken might even buy three hot dogs. The point is, that it takes lower and lower prices to get Ken to buy more and more of the product. If a seller wants to increase sales volume, then they lower the price.

Besides satisfaction, lower prices bring new consumers into the market. There may be a number of people who will not buy steak at $2.60 per pound. However, if the price of steak is lowered to $2.00 per pound, some people who would not buy at $2.60 per pound will decide to buy.

Demand So Far

So far you know that the law of demand is valid, and you know some general examples of how it works:

- Greater quantities sell at lower prices.
- Higher prices come from selling smaller quantities.
- At lower prices new buyers come into the market, and those already buying, buy more.
- At higher prices some buyers stop buying all together, and the others buy less.

Shifts In Demand

The law of demand deals only with price and quantity. There are other factors which affect the demand for a product (Fig. 10). Changes in such factors as **consumer income, population, tastes, competing products, and expectations** can cause changes in the consumption of a given product without any change in the price of the product. Such factors are called shifters, because they **tend to change** or shift the relationship between the price and the quantity demanded. For example, an increase in consumer income usually increases the overall demand for beef. More beef is consumed at all price levels after the shift in income occurs.

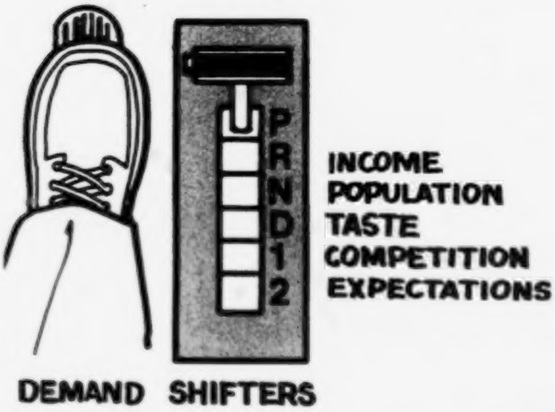


Fig. 10 — Changes Other Than The Law Of Demand Affect The Demand

SUMMARY OF SHIFT FACTORS

Here are the factors that alter the demand when there is not a change in price:

- Population increase or decrease
- Taste
- Consumer income
- Price of competing products
- Expectation

Population is the prime demand shifter. More people eat more food, wear more clothes, need more houses, and buy more goods and services.

Shifts in demand are also caused by changes in **taste and preferences**. For example, look at the fact that there is less demand for lamb today than 20 years ago. The main reason is thought to be that most of today's consumers simply have not developed a taste for lamb as much as their tastes for beef, pork, and poultry.

Another reason for shifts in the demand is changes in **consumer income.** Naturally the more money people have, the more that they are willing to spend.

Changes in the cost of competing products is another cause of shifts in demand. The demand for pork chops at $1.50 per pound might increase substantially if beef steak prices changed from $1.50 per pound to $2.60 per pound.

Demand also is shifted by changing expectations. People may become anxious to buy now, even at high prices, if they feel that prices in the future will be even higher. They may be reluctant to buy, even at low prices, if they feel that prices in the future will be lower.

SUMMARY OF THE LAW OF DEMAND AND SHIFTS

The law of demand partly explains the behavior of a wide range of individual buyers. These buyers have many differences in taste and income that can shift market demand. The law of demand attempts to explain the market including all of these differences. Shifts in the demand sometimes overshadow the effects of price changes. This has caused some who do not understand the concept of demand to doubt that the law of demand is valid.

So, think of the law of demand, and the shift factors which can affect it, as one. Together, demand shifts and price changes account for any changes in demand for a given product (Fig. 11).

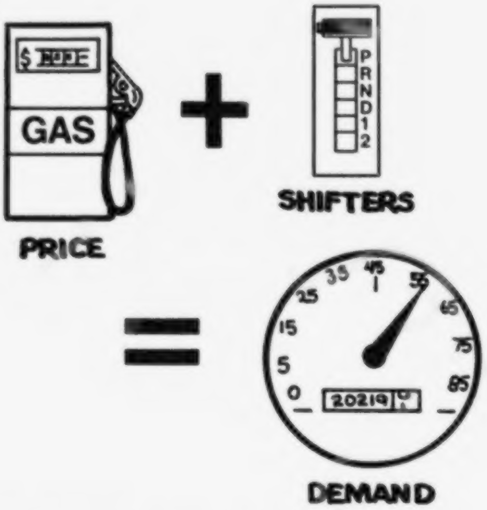


Fig. 11 — Price Plus Demand Shifters Equal Demand

Effect of Demand Shifts On The Prices Producers Get

Middlemen buy raw products from the farmers and ranchers and sell finished products to retailers. The value of the raw product depends to some extent on the value of the finished product.

The value of live cattle is determined by the value of beef at retail stores. If grocery stores get a high price, then ranchers may get a higher price. Prices may not move up or down at the same amount or occur at the same time. The difference between the consumer's price for beef and the price of live cattle represents the amount that middlemen get for the services of processing and distributing the product (Fig. 12). The prices middlemen get for their services are influenced by the supply of and the demand for their services.

The law of supply and demand and shifts in supply and demand also determine the price of services as well as product. If demand is high for the services that middlemen provide, middlemen will pay less for raw products. Sometimes shifts in demand for middlemen services have more influence on price than changes in the quantity of products produced.

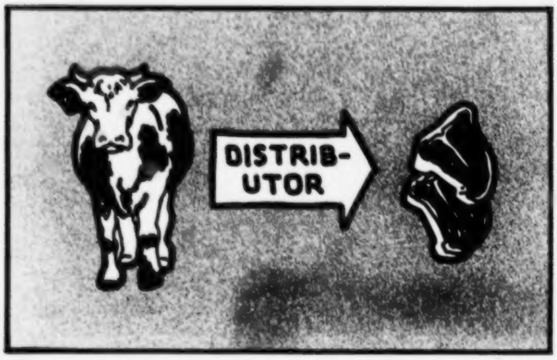


Fig. 12 — The Distributor Provides Services To The Consumer

THE LAW OF SUPPLY

Supply is the second pillar that supports price. Supply refers to the amount of product that producers are willing to produce at a given price. Supply is affected by both the price of the product and overall shifts in supply.

The law of supply states, that **when the price of a product is lowered (assuming no change in factors other than price) less of the product will be supplied** (Fig. 13).

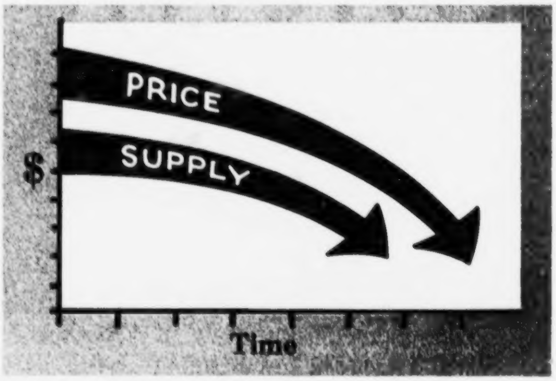


Fig. 13 — Less Price Means Less Product Supplied

Why Does The Law Of Supply Work?

The reasons that the law of supply works are rooted in the nature of production cost and profitability. If a producer produces more, each additional unit of product will add more to the production cost. In general, the producer stops when the cost of producing the last unit equals the selling price of the product.

For example, Pat Robertson raises feed corn on several hundred acres in the midwest. Pat needs more pesticide, seed, and other variable inputs to grow 100 bushels instead of 50 bushels per acre. At some point, yield increases become smaller. Production has entered Stage 2 (see Fig. 5, page 5-3).

Suppose that Pat can produce 90 bushels of corn per acre at a cost of $146.00. The cost to produce the last 10 bushels is $1.80 per bushel. The next 10 bushels (100 bushels per acre) can be produced for $20.00 or $2.00 per bushel. Corn produced at a rate of 100 and 110 bushels cost Pat $22.50 or $2.25 per bushel. Pat grows corn only as long as she can get back returns enough to pay for her expenses. If she expects corn to sell for $2.00 a bushel, then she will produce only 100 bushels per acre. In brief, marginal cost equals marginal revenue.

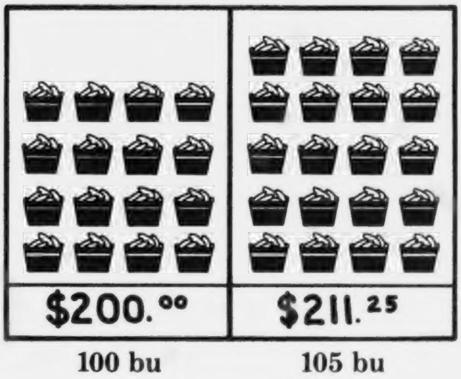


Fig. 14 — It Costs More To Produce More

Higher prices encourage greater production. If Pat can get a higher price, she is willing to apply more inputs per acre and get a greater supply.

The combined effect of Pat and many other producers making such production plans leads to increased supplies when prices are expected to be higher (Fig. 15) and reduced production when prices are expected to be lower.

Basically, in the price cycle people plant more if they expect to make more money. Supplies then go up, and price is forced down.

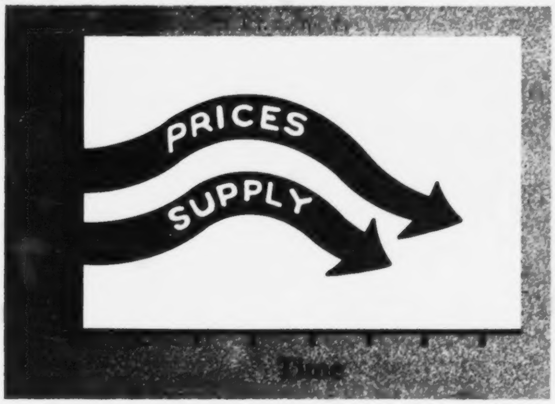


Fig. 15 — Supply Chases Price

SUMMARY

New technology, weather, and other factors influence the amount of products that are produced. Also, an expected increase in their selling price by the farmer or rancher tends to increase production. An expected decrease in price tends to lower production.

Shifts In Supply

There are shifts in supply just as there are in demand. The law of supply depends on two factors:

- Differences in production cost at the different levels of production among the different producers

- Differences in the profitability of competing products

Production Cost Differences

Shifts in supply result from changes in production costs or changes in the profitability of competing products. For example, a decrease in the cost of producing Pat Robertson's corn makes farming more profitable, without an increase in the selling price. Increased profits cause increased production (Fig. 16). New producers begin to plant corn.

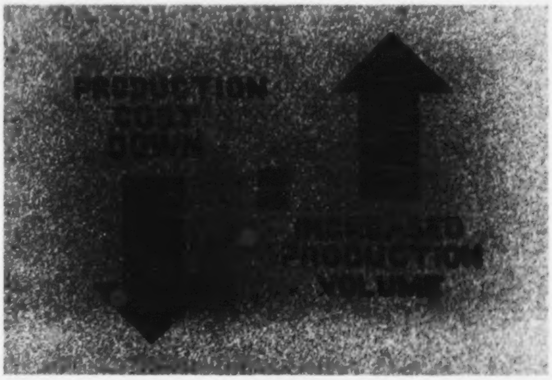


Fig. 16 — Lower Costs Help Create Higher Production

Decreases in production cost tend to increase supply. Increases in production cost tend to decrease supply.

Profitability Differences

Changes in the prices of competing products may also cause shifts in supply. With corn prices at $2.20, soybean prices at $5.75, and cotton prices at $.60 it might be profitable for Pat to produce cotton or soybeans rather than corn. At a corn price of $2.50, many cotton producers might compete with Pat and switch to corn. Both cotton and soybean producers might raise corn if corn prices are at $3.00. Supply is directly affected by prices received for competing products and by profitability.

SHIFTS SUMMARY

Anytime that the amount of a product that is for sale varies, there is either an expected price change, a shift in the supply or both. Such factors as weather conditions, disease and insects also cause unexpected and often unavoidable supply shifts.

The Role Of Price Expectations

Price expectations also play an important role in determining the supply of agricultural products. Most production decisions for agricultural products are made before the prices of the products are known. Producers must act on **expected** prices rather than known prices (Fig. 17). They produce more of the products that they "think" will be more profitable and less of the products that they "think" will be less profitable. Their decisions may turn out to be incorrect.

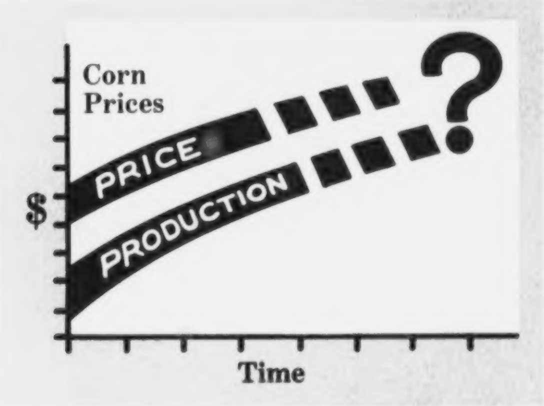


Fig. 17 — Producers Plant Based On Expected Price

Pat Robertson and her fellow producers often base their price expectations on past price levels. If prices are higher in one year, then they probably will increase production the next. If enough of these producers increase production, then the supply will increase and the prices will fall. If there is an increase in demand, however, the prices will stay the same or increase.

If prices decrease, the producers may reduce production. When enough producers decrease production, the supplies will decline, and the price received for the product will rise. The cycle goes up and down.

Price Cycle Length

The growing season in agricultural production sets the length of price cycles (Fig. 18). The length of the cycle varies with the length of the production process. A cycle in broiler production takes only a few months. The cycle for most field crops is usually one year. For beef cattle, the cycle may take four to six years because of the long breeding, feeding, and marketing time. This is called the lagged supply response in agricultural production and is the basic cause of price cycles for many agricultural products.

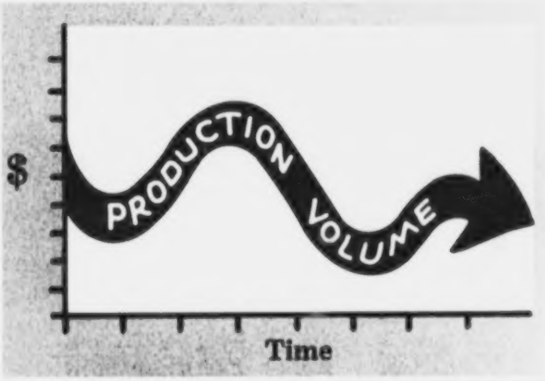


Fig. 18 — Price Cycles Are Set By Growing Seasons

The Role Of Perishability

Producers want to sell when prices are high. However, products such as milk, eggs, fruit, and vegetables are perishable and must be sold when they are ready for market. Other products such as soybeans, wheat, corn, and cotton are easily stored until the market price is right. Many agricultural products such as cattle, hogs, broilers, and turkeys fall between the extremes of perishable and storable. The producer of these products enjoy a degree of flexibility in choosing the time to market.

The point is that you should know the perishability of a product, and plan for it before you produce it. Risk increases with perishability. The profits for highly perishable products should be higher to justify the risk.

Long Run Supply Versus Short Run Supply
Production time sets the length of the market price cycle. Cattle have a long production time. Corn has a short production time.

In the long production time the supply will change more due to price change. Cattlemen, with a long price cycle time, can bring more pasture land into production, buy new equipment, and buy cattle to expand production when they expect high prices. On the other hand, if ranchers expect low prices, they have time to sell stock early, depreciate or sell equipment, and reduce production.

Life is different on Pat Robertson's farm. Pat raises crops. With a short cycle time, she must use the production equipment and facilities that she has or let them go idle. Pat produces in the short-run as long as she can cover out-of-pocket production costs. Once she plants crops, the amount of production is restricted. With production in progress there is little Pat can do to change supplies regardless of price expectations. Once production is completed and the supply is fixed, the only real decision Pat makes is in timing the sale.

In the long run, supplies may be increased or decreased substantially in response to high or low price expectations. As the production period progresses, supplies become less and less flexible. At market time, supplies are essentially fixed. Pat can market no more than she has produced regardless of how high corn prices may be.

SUPPLY AND DEMAND WORK TOGETHER

You know the two ingredients of price:

- Supply
- Demand

Now, let's examine how the ingredients are mixed to make the market price.

The ingredients must equal one another to make a market price. There are some forces that can adjust the ingredients so that they will be equal. Market price is the result of the effects of supply and demand as they come together to form a market. Making a market price is a little like mixing two chemicals to make a compound (Fig. 19).

Fig. 19 — Price Is A Mixture Of Supply And Demand

Price Requires Equality
The market price is achieved when the supply price is equal to the demand price. When this happens, the price that sellers are willing to take is equal to the price that buyers are willing to pay. The price that is offered equals the price that is demanded.

Also, at the market price the amount of product that sellers are willing to sell must equal the amount of product buyers are willing to buy. The quantity that is supplied equals the quantity that is demanded.

For example, if the quantity supplied is greater than the quantity demanded, some sellers will not be able to find buyers for their products. If sellers reduce the price, buyers will buy more (law of demand). Quantity supplied will equal quantity demanded. The market price (equilibrium price) is established and the market is cleared.

On the other hand, if the quantity demanded is greater than the quantity supplied at a certain price, some buyers will not be able to find products to buy. If buyers increase the price offered, they will encourage sellers to produce more (law of supply). The market price (equilibrium price) is established and the market is cleared.

In general, sellers will not take less money than they have to in order to sell their product. Buyers will not pay more money than necessary to get what they want. At the price where supply is equal to demand, buyers are not willing to pay higher prices, and sellers are not willing to accept lower prices. The price when the quantity supplied is equal to the quantity demanded is the market price (equilibrium price) (Fig. 20).

Fig. 20 — A Market Price Is An Equilibrium Price

SUPPLY, DEMAND, AND MARKET PRICE

Supply and demand work together to make the market price. There is no free market occurrence that cannot be explained by using the basic concepts of supply and demand. It is often difficult to predict what supply and demand will be in the future. It is also difficult to determine why the forces of supply and demand behave as they do. The difficulty is always in measuring the forces of supply and demand, and not in determining price once supply and demand are known. The point is, once you know what forces make the market price, you can begin to do the kind of analytical thinking that leads to good marketing decisions. You can forecast the future and market accordingly.

TAKERS AND SEEKERS

Some buyers and sellers in our marketplace must take the market price for their product. Their business transactions have little impact on the market. Others, however, can control the market price for the product that they buy or sell. These two types of people are the:

- Takers (take what the market gives)

- Seekers (attempt to control the market)

The **takers** "individually " can not control the marketplace. Examples are wheat farmers and buyers, and cattle ranchers and buyers. There are many sources for these products. Takers only can store or delay their purchases or sale of a product if they feel that future prices may mean greater returns.

Seekers on the other hand are buyers and sellers who can influence market supply, demand and prices. They can manipulate the market to varying degrees because they deal with a specialized product or commodity that has limited competition.

Both takers and seekers know that the market price is constantly changing. These buyers and sellers rely on market forecasters, consultants and other people who predict future markets. These predictors use elasticity principles to help them determine what future markets will be.

ELASTICITY

Generally, elasticity is a measure of how sensitive the market is to a change in one of the parts. We can look at this as a gap between supply and demand that is made out of elastic (Fig. 21). This imaginary gap can be pulled or pushed together.

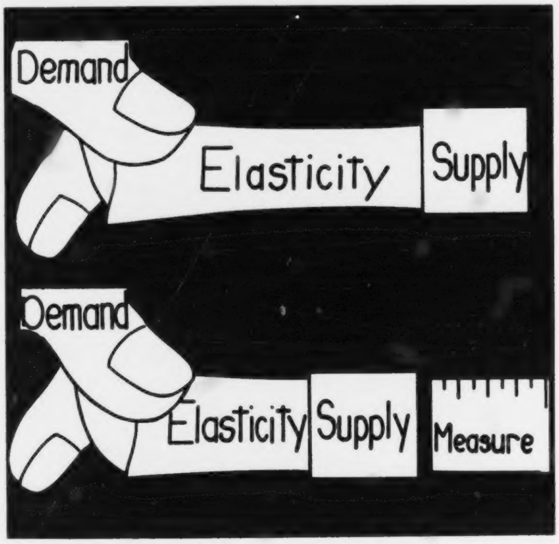


Fig. 21 — Elasticity Can Be Looked At As A Gap Between Supply And Demand That Is Made Out Of Elastic.

The movement of the supply and demand can be measured as a percentage against the force that caused the pushing or pulling. This gap can be changed by such things as:

- Ability of products to substitute for each other.
- Increases or decreases in supply.
- Increases or decreases in demand.
- Income changes in the population that buys the product.
- Price increases or decreases demanded by buyers and sellers.

PRICE ELASTICITY

Price elasticity is a common measurement that is used by market forecasters. It is an example that also can be used to show how the general principle of elasticity works.

In this example, the elastic that holds supply and demand together must be called price elasticity.

A formal definition of this term is that:

- Price elasticity (E) is the change in either the supply or demand that results in a measurable percentage change in the market price of the product.

In the reality of the marketplace, this means that if there is a shift or change in supply or demand then there must be a change in price in order for the market to work. Forecasters also can use this to project a price into the future and estimate how much of the product will **probably** be sold.

The formula for measuring price elasticity is:

$$\text{Price Elasticity} = \frac{\text{Percentage Change In Quantity}}{\text{Percentage Change In Price}}$$

Percentage change in all cases measures movement. Movements are opposite for supply and demand.

There are five outcomes of price elasticity:

1. Perfectly elastic equals infinity. If price increases at all, demand will be zero. If price decreases at all, every product that can be supplied will be sold. The opposite is true on the supply side.

2. Relatively elastic is greater than one. Small percent price increases mean large supply or demand percent changes. Small percent price decreases are caused by large supply or demand percent changes.

3. Unitarily elastic equals 1. If a price changes; the supply or demand will change by the same percentage.

4. Relatively inelastic or E is less than 1. Large percent price changes mean small percent changes in supply or demand.

5. Perfectly inelastic equals zero. Price changes do not alter the supply or demand.

PRICE ELASTICITY APPLICATION

June Montgomery managed a successful grain crop farm in the Northeastern part of our country. She sold her business five years ago and concentrated on her hobby of painting pictures of rural scenes. Her hobby grew into a business.

She became a well-known artist in her region. Every month she takes two paintings to her agent in a nearby town and returns home with a $1,000 check (Fig. 22). Her agent sells her paintings for a fixed fee at the local art gallery.

When she was a manager of her farm, she sold her crops as a "taker." Now that she has a specialized product, she feels that she can play the seeker's role. She believes that she can control the price for her unique product by manipulating her supply. She wants to begin by charging $100 more per picture.

June's art agent gives June some predictions that are based on his past experience. He feels that if June charges $100 more per painting, then she will sell 20 paintings per year.

Fig. 22 — June became a well-known artist in her region.

June applies the price elasticity formula to her situation. The percentage change in quantity is divided by the percentage change in price. She uses her agents data in her equations.

Her procedure is:

1. She determines the percentage change in quantity by subtracting her new yearly quantity of paintings (20) from her old (24). $Q_2 - Q_1 = 4$.

She then adds her new yearly quantity (20) to her old quantity (24). $Q_2 + Q_1 = 44$.

She then divides 4 by 44 and gets the percentage of change in quantity (.0909).

2. She finds her percentage change in price by subtracting her old price of $12,000 yearly income from her expected income of $14,400. $P_2 - P_1 = \$2,400$.

She then adds the two quantities. $P_2 + P_1 = \$26,400$.

She then divides $2,400 by $26,400 and gets the percentage of change in price (.0909).

3. She then divides the percentage change in quantity (.0909) by the percentage change in price (.0909). The result is 1.

Here is the formula that June used to find her results.

$$\text{Price Elasticity (E)} = \frac{(Q_2 - Q_1) / (Q_2 + Q_1)}{(P_2 - P_1) / (P_2 + P_1)}$$

June finds that she does have control over the present market. Her results tell her that she can reduce her releases per months and still receive her $12,000 per year income. She is in a **Unit Elastic** market.

June knows that markets change. She intends to keep track of what her demand will be. She decides to make this a regular exercise throughout the year. She knows that there is a limit to the manipulation of supply.

MARKET STRUCTURES

You know that the laws of supply and demand come together to make the market as lumber and nails come together to build a house. What about the plans for the house that the architect makes? You know there are lots of different plans for houses. Marketing plans are not as diverse as housing plans, however, there are four basic structures (Fig. 23):

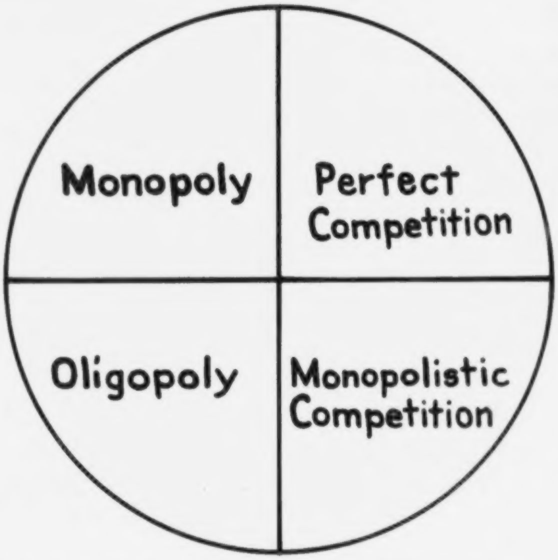


Fig. 23 — There Are Four Basic Market Structures

- Perfect competition
- Monopolistic competition
- Oligopoly
- Monopoly

Each is described on the following pages.

PERFECT COMPETITION

There are many small firms in a perfect competition structure. An individual firm's production and marketing decisions may have no influence on price because the product is nearly the same (Fig. 24).

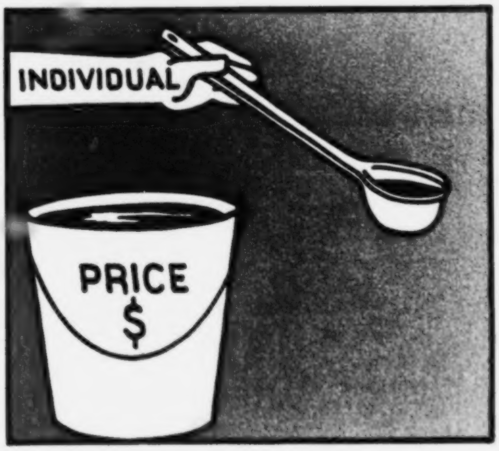


Fig. 24 — In Perfect Competition, An Individual Firm May Have No Influence On Price

James Hartford, a Kansas wheat farmer, is a good example of an individual who is marketing in perfect competition. If the price of wheat rises because of an increase in demand, James responds by planting more wheat the next crop year. He tries to "maximize profits". Other farmers increase their wheat acreage too, and new farmers may switch to wheat. Supply increases and the price may fall.

A long-range problem is developing for James. So much wheat is produced that the price does fall. If James does not increased output, he still has a problem. He has fewer bushels of wheat to sell at the lower price. By his own actions, James cannot prevent the decline in price. That is the perfect competition market structure. Unless James has alternative uses for his resources, he faces the price problems that will come when the increased supply is sold on the market.

Characteristics Of Perfect Competition

Here is a quick checklist to identify characteristics of a perfect competition market structure.

- There is a large number of individual firms. No one firm can influence price. (From a buyer's viewpoint, there is such a large number of buyers that no one buyer can influence the price.) These people are takers.
- Sellers and buyers have equal and perfect knowledge of all market conditions.
- All firms offer a nearly identical product. **Any firm's product is a perfect substitute for any other seller's product.**
- There are no restrictions on entry or exit of producers and resources into the market.
- Sellers and buyers try for maximum self interest.
- There is no effective collusion among buyers or sellers. However, some producers form cooperatives, establish market orders, seek legislation, or find other market restraints.

MONOPOLISTIC COMPETITION STRUCTURE

In a monopolistic competition structure, there are also many small producers and sellers. Their products are not identical. There is product differentiation in quality (Fig. 25). Differentiation is measured in such things as size, quality and weight. Differentiation gives a reason for a buyer to prefer one seller's product over another.

Fig. 25 — In Monopolistic Competition There Are Many Small Producers And Sellers

Examples of monopolistic competition market structures include:

- Producers of seed, wheat, and seed corn may offer products that differ.
- Quality is also a factor in cotton where staple length is important.
- Quality is important in cattle where quality grade, dressing percentage, and yield grade all determine value.

This producer can bring information about a product into the market to make it look better than the competition. To some degree they can control the market.

Think about how a seller can bring information to the market to make a product look good. Bacon, for example, may be essentially the same. Individual brands of bacon can be significantly different. Part of the difference can be physical because of different processing procedures. Part of the difference can be a perceived difference. That is Brand X may be essentially the same as Brand Y. If Brand X is effectively advertised, it may be perceived as different by buyers. The demand for Brand X is increased by bringing differences in the product to the attention of buyers. They think it is better.

Characteristics Of Monopolistic Competition

Here are six characteristics of a monopolistic competition market structure:

- There are many small firms.
- Individual firms have little influence on the price.
- Quality plays a part in the price. There is product differentiation.
- The firms, through promotion and advertising, attempt to convince buyers that there are real differences in their products. By creating a demand, they have limited control over the market.
- There is little or no collusion among firms. Each generally ignores the other.
- Firms can enter or exit the market without restriction.

Fig. 26 — In Oligopoly Competition Only Slight Differences Occur In The Product

OLIGOPOLY

The third market structure is oligopoly.

In oligopoly, there are fewer firms than in monopolistic competition. There is still some differences in product quality (Fig. 26). These firms spend huge sums of money to make buyers think that there are bigger differences than there really are.

One of the few big firms that make up the oligopoly can affect price at times, but competition keeps it from controlling price.

These big firms are also interdependent. They must cooperate with one another to keep the market steady.

Also the firms can effectively limit new firms from entering the market or old firms from leaving. The limiting is done by:

- Patents
- Controlling raw materials
- Big capital investments
- Market organization
- Labor control

The flour milling industry approaches oligopolistic status. There are some quality differences in the grade of wheat of course, but the flour produced by each firm is advertised as if it were a unique product. Sugar mills, breakfast cereal makers, and processors in the fruit and vegetable industry are also oligopolies.

Grape growers are sellers in an oligopolistic market. They all grow similar grapes in the same way. They each put their own label on the boxes and advertise that their grapes are best.

The price varies a little, but not much. All of these growers must cooperate with one another to keep the market steady. If one were to cut prices and break the market all would have to do the same.

Characteristics Of The Oligopoly

All oligopolies have these characteristics:

- Oligopolies are a small number of large firms producing or buying enough to affect prices and the pricing policies of other firms.
- The products are close substitutes. The sellers attempt to convince buyers that there are differences. As a group they can control the market to some extent.
- There is limited entry into the industry by new firms. Entry may be limited by:
  - capital investment requirements
  - market organization needs
  - control of patents and raw materials by already involved firms

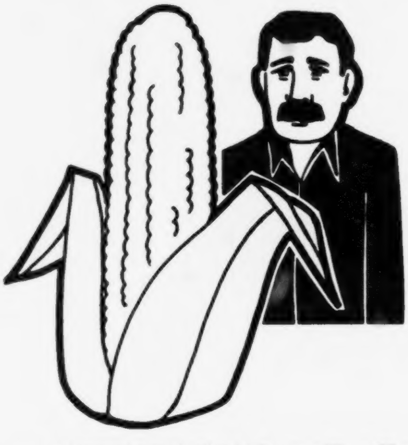


Fig. 27 — A Monopoly Is A Single Larger Firm That Controls A Market

MONOPOLY

The fourth market structure is the monopoly.

A monopoly is the opposite of perfect competition. Instead of many small firms there is a **single large firm** (Fig. 27).

In a rural town, a farm machinery or fertilizer dealer may be the only supplier. The firm can fill most of the local needs for less than it costs to travel to and purchase in another town. Pricing policies are designed to secure profits. Usually price levels are held down to discourage competing firms from moving in.

In production agriculture, the closest approximation to a monopoly would be a producer who sells certified seed or purebred livestock. Generally, a monopoly is not an important structure in agricultural marketing.

Characteristics Of A Monopoly

Here are some characteristics to help you identify a monopoly.

- There is only one firm. By determining the amount produced, it can affect prices. These people are the seekers who can control the market supply, demand, and price.
- There are no close substitutes for the products.
- There is no freedom for new firms to begin producing the product. Through control of the market or raw materials, the monopolizing firm can prevent new entries.

Monopolies in the United States are illegal except for public utilities, such as electricity, the post office, and the public highway system. These are not pure monopolies due to some competition. There are many power companies. New delivery services are competing with the postal department. Even private roads and bridges prevent a perfect monopoly in the road system.

However, in some countries huge state run monopolies are the rule rather than the exception. The consumer pays the price in service and in quality for these monopolies.

THE MARKET AS A WHOLE

Market forces, supply and demand, and the structures of the market can be added together to get a complete view of the entire marketing system.

When the entire marketing system is considered, one feature that stands out is the sharp difference in the role that the decision makers play in the pricing process. In general, as you move through the marketing system from the producer level, the decision makers have more and more effect on market prices (Fig. 28).

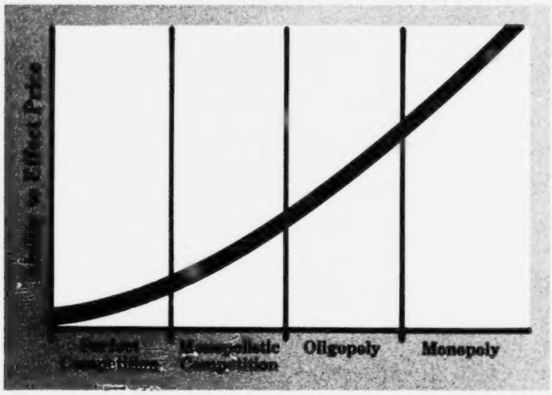


Fig. 28 — Decision Makers Have Different Degrees Of Influence

Let us look at a market within the entire marketing system. From this we can see how the whole market works. For example, look at the beef sector of the agricultural marketplace.

There are generally six levels of beef marketing. Price is generally determined in five of the levels.

Fig. 29 — What Is The Customer Going To Buy?

1. Leo Kipper of Kipper's Grocery, studies his customers buying habits (Fig. 29). Leo learns which cuts of beef that his customers buy and what they are willing to pay. He figures how much he can afford to pay for beef to sell in his store and make a profit. Then Leo offers his bid to Dick Wilder at Wilder's wholesale beef.

2. Wilder, who specializes in breaking beef carcasses into retail cuts, considers the bid price from Kippers. Wilder calculates the price that he can afford to pay for carcasses and make a profit. Wilder offers a bid to the local slaughter house of R. P. Lewis.

3. R. P. Lewis, the slaughtering firm, looks at Wilder's bid and figures out how much they can afford to pay for live cattle and make a profit (Fig. 30).

4. Don Honey, a cattle feeder, is approached by R. P. Lewis with a bid to buy live cattle. At this level, Don doesn't have as much freedom to calculate his cost and build in a profit as Kipper, Wilder, and Lewis.

Don figures his cost and looks at the offer. If he can make a little profit, he takes the offer. If he can't, he will wait for a better offer from one of the many buyers that come by.

5. At the bottom of the pricing process is Jerry Russell, a cattleman, who produces stockers and feeders. Jerry has even less ability to build in a profit than Don Honey, the cattle feeder. Jerry Russell is a price "taker". He usually takes the price offered for his cattle. Unlike Don Honey the cattle feeder, Jerry doesn't have a large pool of cattle buyers making offers on a regular basis.

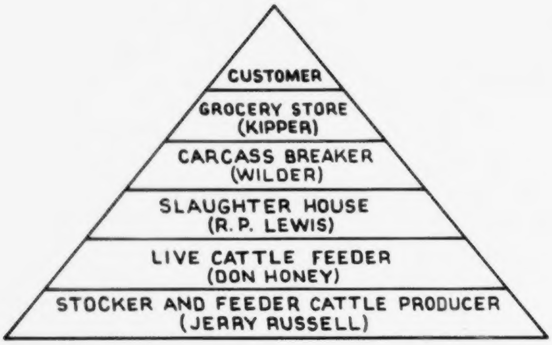

CUSTOMER
GROCERY STORE (KIPPER)
CARCASS BREAKER (WILDER)
SLAUGHTER HOUSE (R. P. LEWIS)
LIVE CATTLE FEEDER (DON HONEY)
STOCKER AND FEEDER CATTLE PRODUCER (JERRY RUSSELL)

Fig. 30 — There Are Six Levels Of Beef Marketing

This chain happens in other agricultural markets. In the grain market exporters calculate their bids to local and regional elevators based on the price in the world market. Elevators take these bids, deduct the margin that they need to cover their costs and risk, and bid to the local grain farmers. At every level, the transactions are usually protected by a cash contract or a hedge by using the grain futures.

The process of passing a price down through the marketing system is not free from problems and friction. Over time, the net result is an **operating margin** at every level in the system above the producer, and a product available for the consumer.

MARKETING STRATEGIES

The "takers" can take some of the risk out of the market. They can develop a strategy. Marketing strategies for most farmers and ranchers center on methods of dealing with unpredictable price variations. Future patterns of some supply and demand forces can only be guessed at because there is no way of attaching probabilities to the possible outcomes. Uncertainty is the word used to describe these situations (Fig. 31).

Fig. 31 — Marketing Strategies Help Overcome Uncertainties

For example, in the early 1970's the USSR changed an established import policy, and imported feed grains to improve the meat consumption of its people. United States farmers could have benefited a great deal from foreseeing the change. However, they had no basis for attaching probabilities to this decision before it was made. Grain farmers could not collect information and analyze it. They couldn't say, for example, that there was a 70-30 chance for a 20 percent increase in grain imports by the USSR.

A reasonable risk situation has mathematical probabilities. With accurate probabilities farmers and ranchers can make marketing strategies with some confidence. For example, Sue Ash, a western grain farm manager, knows that the short run variations in yields depend on weather. Although weather conditions are not known with certainty, there are probabilities that can be assigned to the amount of rainfall, average temperature, and length of the growing season. Knowing these, Sue can estimate the probabilities for expected yield and the resulting total market supply. Sue can then look at demand forecasts and market outlook information to forecast a probable price range. By using the probable yield and price, Sue Ash can decide, with some confidence, whether to:

- Increase production to realize greater returns in a year of expected high prices.

- Decrease plantings to save expenses in a year of expected low prices.

DEGREES OF KNOWLEDGE OF FUTURE EVENTS

Sometimes you are more sure of your strategy in some situations than others. This may be called "degrees of knowledge of future events".

The important thing for you to keep in mind is:

- There is a range of confidence (degrees of knowledge) stretching from certainty to uncertainty (Fig. 32).

- Know where you are in that range when you are making a market decision. Know how much you can trust your information.

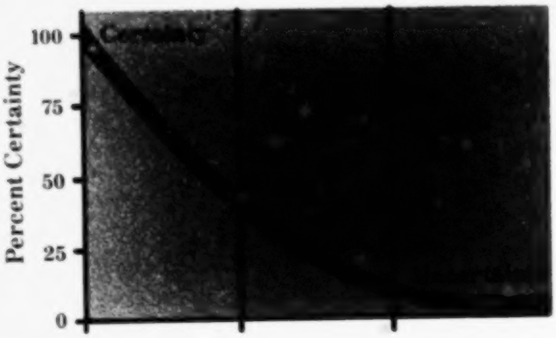


Fig. 32 — The Range Of Confidence For Predicting The Future Ranges From Certain To Uncertain

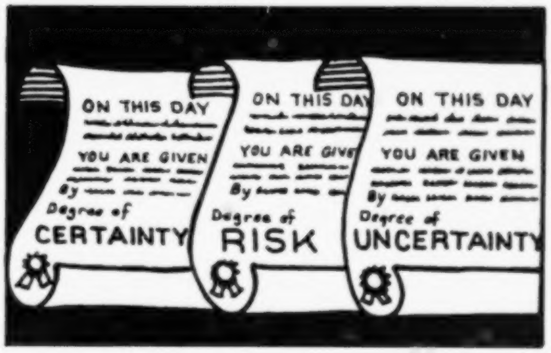


Fig. 33 — The Successful Manager Knows Their Capacity For Decision-Making

There are three distinct degrees (Fig. 33) of the knowledge of future events.

- Certainty
- Risk
- Uncertainty

CERTAINTY

At one end of the range of degrees of knowledge is certainty. A farmer may know with certainty that a particular buyer will be making a large purchase.

UNCERTAINTY

At the other end of the range is uncertainty. The intentions of some buyers in buying or selling agricultural commodities is always a guess.

Between these extremes, there is a range of knowledge about future events affecting price that we call risk.

CERTAINTY — RISK — UNCERTAINTY

Know where your information falls in the range of knowledge. This is the first step in selecting a marketing strategy. There is no recipe for the best strategy or combination of strategies. Each farmer and rancher must assess their own business and family situation. Farm business, family goals and objectives, financial position, attitude toward risk, on-farm storage facilities, and knowledge about marketing strategies are factors which influence your choice of a marketing strategy.

MARKETING STRATEGIES FOR MOST FARMERS AND RANCHERS

There are six basic marketing strategies that people use.

Marketing strategies:

- Buy and sell at current cash prices.
- Buy and store or store and sell.
- Deliver and defer price.
- Fix the price before delivery (forward contract).
- Forward the price with a futures contract (hedging).
- Sell (buy) on the cash market and speculate in the futures market.

BUY AND SELL AT CURRENT CASH PRICES

Prices that are paid and received are **dictated by the market** at the time of the physical exchange of the product. Prices for most farm products, and some farm inputs, are highly variable. Therefore, net returns under this method are also highly variable. That is, there is a possibility that net returns will be higher than with any other marketing strategy, and there is a possibility that they will be lower. This method actually provides a high degree of risk. The farmer or rancher is at the mercy of the market without control over price risk.

For example, John Tasman uses this marketing method but he may need to change. John buys all of his inputs (fertilizer, seed, and fuel) when he needs them, and sells his grain when it is harvested (Fig. 34). John does not take advantage of off-season discounts for his inputs. John does not store his grain in anticipation of higher prices, but simply markets when he harvests.

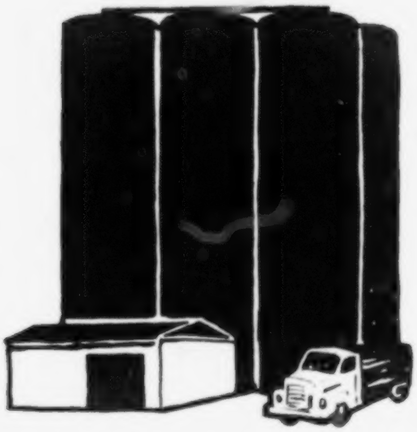


Fig. 34 — "Harvest And Sell" Is Done At Current Cash Prices

John spends more than he should for inputs and sometimes receives less than he should for his grain. He can reasonably expect fertilizer prices to be at their highest during the few weeks before the growing season starts. Fertilizer is likely to be in short supply and dealers are under the most pressure to deliver what has already been sold. On the other end of the growing season, grain prices are rarely at their annual high during the harvest season. This is the time of glut at many country grain elevators.

If he goes into a large-scale nonseasonal operation, his strategy of buying and selling at current prices may have a low degree of risk. This may then be a good strategy.

An example of a large-scale, nonseasonal operation is Joe Smith. Joe operates a 400 cow dairy farm. He purchases all his feed and sells during all seasons of the year. Buying and selling at current prices during regular intervals throughout the year means that Joe can expect average input and output prices over the entire year.

Joe must find the most favorable price at the time. Joe must not buy feed from only one seller, or sell milk to only one buyer without considering other marketing alternatives. If he did, Joe may lose money and not even know it, because he didn't deal with others to compare.

BUY AND STORE OR STORE AND SELL

A farmer or rancher can consider various prices, speculate on output price, or receive payments to cover storage costs if storage is available. If John Tasman buys his fertilizer early when the price is low, and stores it, then he may save money.

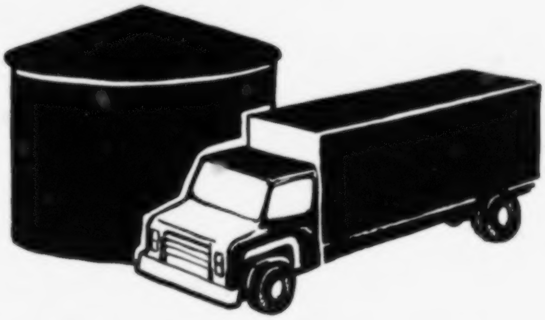


Fig. 35 — "Store And Sell" May Bring Higher Prices

If John stores his grain for a few months (Fig. 35), he may be able to sell at a higher price when the market isn't glutted. He may make more money. However, if John stores, he is speculating that prices will be higher at a later date. Before storing John studies:

- Planting reports
- Weather conditions
- Carry over of grain from previous harvests
- Yield expectations in competing production areas of other countries
- Expected demand based on livestock and food needs

This information provides a basis for John's price forecasting at harvest and gives him several possible selling dates following harvest. With this information, John may decide to speculate by storing at harvest in anticipation of a higher price at a later date.

John must figure the cost of storing the grain. John doesn't have storage bins on his farm, and he must buy bins or pay someone else to store his grain. He must subtract the cost of storage from the amount that he expects to gain by storing. John knows that the expected upward price movement will have to more than offset storage cost. Also, in the long-range market, John can expect price movements to only cover total costs of storage. If abnormally high returns are generated for those who store, more storage will occur, and individual returns will fall.

DELIVER AND DEFER PRICE

Here is a strategy that helps John get the best price. In the deliver and defer price strategy, John delivers the product. Ownership of the product is transferred to the buyer at delivery, but the price is not set and payment is not made until a later date.

The buyer pays John the market price on a specific later date (Fig. 36). John hopes that the market price rises by then. The buyer, of course, hopes that the market price will drop by that time.

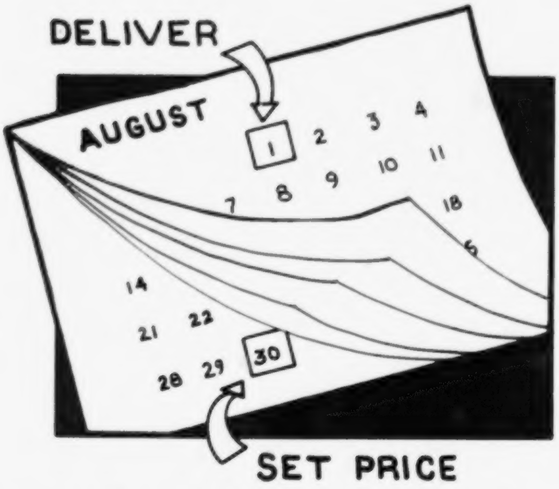


Fig. 36 — "Deliver And Defer" Marketing Lets John Predict Future Values

As John knows, delayed price marketing will allow him to speculate on price without the direct cost of storage. That's different from the last strategy. Because he won't get paid right away he can't immediately use the money. John may not be able to wait until the payment is made. He may have bills to pay. Also, the buyer usually adds a service charge. This service charge is supposed to cover the buyer's storage costs. In addition to the service charge, the buyer receives the grain and enjoys its use or its value free without paying John.

In general, delayed pricing provides John an opportunity to speculate, but returns may not be higher than he could achieve by storing himself and selling at a later time. John also recognizes the potential that his buyer might file for bankruptcy before he pays. This is a substantial risk to John.

FIX PRICE BEFORE DELIVERY (FORWARD CONTRACT)

Here is a marketing strategy that can help reduce risk. John and a buyer agree on a price before harvest. John delivers the product to the buyer when it is harvested and is paid the agreed price (Fig. 37).

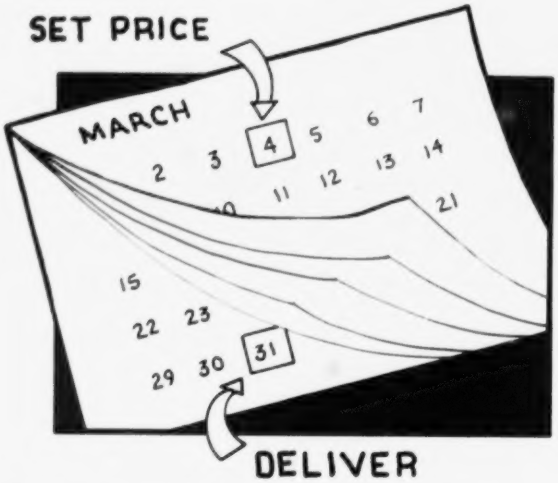


Fig. 37 — Forward Contracts Set Prices Before Delivery, And Helps Reduce Risk

With this strategy, John locks in a price. The buyer must pay the storage costs. John finds that it isn't a bad market strategy, but there are few technicalities that cause him concern.

- The contract price may be lower than the market price at delivery time.
- The buyer may want compensation for bearing the speculative risk and for paying the storage cost. It is best to negotiate this point at the beginning of the contract.
- The contract price may be higher than the market price at delivery time and the buyer may not honor the contract.

FORWARD PRICE WITH FUTURES CONTRACT (HEDGING)

Hedging is a strategy that decreases price risk by obtaining a forward price through futures market transactions. Hedging is not speculation. Like forward contracting, hedging allows a farmer or rancher to obtain a more certain price for either output or inputs prior to the time the output is produced or the input is actually used.

Tom Gardner likes to use hedging to control the price that he pays for feed corn. Tom raises hogs, and he needs a large quantity of corn.

For years Tom watched the price of feed corn go up and down. With limited storage facilities he was helpless against price rises. When he needed corn, he had to buy on the cash market. Sometimes the price was up, sometimes it was down. Tom's returns followed the same trends.

Tom knows that if he can "lock in" his corn supply at current prices then he can manage much more efficiently. He can buy all the feed corn that he needs when the price is low. The problem is that he must raise a large amount of capital and build storage facilities.

Then Tom hears about hedging. With it he can obtain a solid price for the corn without additional storage facilities.

To establish corn price, Tom figures his production costs and a reasonable profit and determines his "localized futures price". He then buys a futures contract for future delivery of the corn. Then at the time the corn will actually be used, Tom buys the corn on the cash market and sells the futures contract for future delivery. The hedge is complete (Fig. 38).

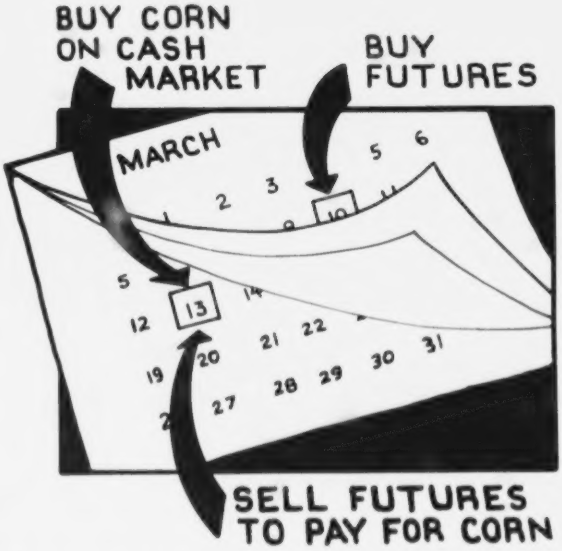

BUY CORN ON CASH MARKET
BUY FUTURES
MARCH
SELL FUTURES TO PAY FOR CORN

Fig. 38 — Hedging Helps You Manage And Budget More Efficiently

The feature that enables hedging to lock in a price is the predictable difference between today's local cash market price (localized price) and the price of the contract for future delivery (futures price). This difference is referred to as the contract's "basis".

For example, assume that the basis remains constant from the time that Tom purchases the corn futures contract until it is sold. Tom determines that the historical price relationship between futures prices and his local cash market prices (basis) is $.30. Tom's transactions look like this:

Cash Market		Futures Market		Basis	
Expected hedged price	$ 3.10	Buy July Futures	$ 3.40	Expected	$ .30
Buy corn on cash market	$ 2.90	Sell July Futures	$ 3.20	Realized	$ .30
Difference	$ +.20		$ −.20		$ .00

Pricing Results

Local price for corn	$ 2.90
Futures profit or loss	$ −.20
Net realized hedged price	$ 3.10

Tom tries to lock in a price of $3.10 for his corn. He speculates on his ability to determine basis not on the price of corn.

Since the futures contract price fell, the contract's purchase price is higher than the sales price, therefore, Tom lost on the futures contract. However, the cash price fell an identical amount. Because basis remained constant the amount of the loss on the futures contract was exactly offset by the reduction in price of corn on the cash market. The $3.10 corn price that Tom wanted at the time of the hedge was achieved (Fig. 39).

Suppose the futures price goes up instead of down. Tom's transaction then looks like this (assuming basis remains constant):

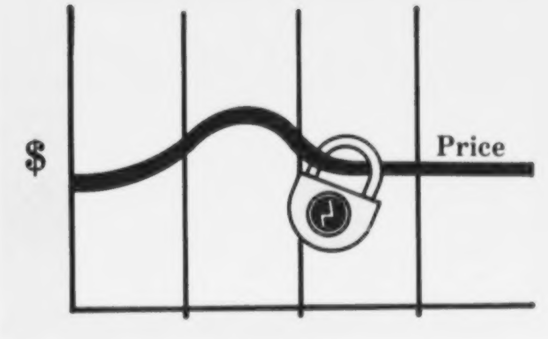


Fig. 39 — Hedging Locks In The Price

Cash Market		Futures Market		Basis	
Expected hedged price	$ 3.10	Buy July Futures	$ 3.40	Expected	$ .30
Buy corn on cash market	$ 3.60	Sell July Futures	$ 3.90	Realized	$ .30
Difference	$ −.50		$ +.50		$ .00

Pricing Results

Local price for corn	$ 3.60
Futures profit or loss	$ +.50
Net realized hedged price	$ 3.10

Since the futures contract price rises, the contract sales price is higher than its purchase price. Therefore, Tom gains on the futures contract. However, the cash price also rises an identical amount. Because the basis remains constant the amount of the gain on the futures contract is offset by the rise in price on the cash market. The $3.10 corn price that Tom wants at the time of the hedge is achieved.

Now let's assume Tom decides that current hog price levels are profitable and wants to lock in a more certain price. Tom figures his production costs, hedging costs, and a reasonable profit. He now determines the price that he wants (localized futures price). Again, assume that the basis remains constant throughout the hedge. Tom is trying to lock in a price of $51.00 per cwt. for his hogs.

Cash Market		Futures Market		Basis	
Expected hedged price	$ 51.00	Sell October Futures	$ 51.75	Expected	$ .75
Sell hogs on cash market	$ 47.00	Buy October Futures	$ 47.75	Realized	$ .75
Difference	$ −4.00		$ +4.00		$ .00

Pricing Results

Local price of hogs	$ 47.00
Futures profit or loss	$ +4.00
Net realized hedged price	$ 51.00

In this case, Tom sells a futures contract since he is offering his hogs for sale.

Since the futures contract price falls, the contract's sales price is higher than the purchase price. Therefore, Tom gains on the futures contract. However, the cash price also falls an identical amount. Because the basis remains constant the amount of gain on the futures contract is offset by the loss in price on the cash market. The $51.00 price Tom wants is achieved.

An important point to remember about hedging is that it not only insures against unfavorable price movements, but also prevents gains from upward price movements. In other words, hedging eliminates both losses from adverse price movements and windfall gains (Fig. 40).

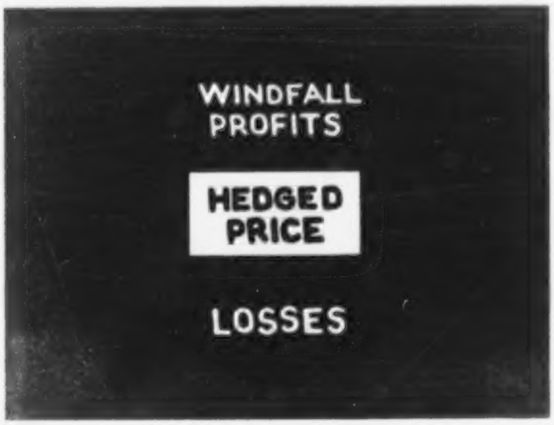


Fig. 40 — Hedging Insures Against Loss And Prevents Gains

Also, in practice the basis does not stay constant. Although the change in basis is somewhat predictable there is some risk of unexpected basis movement. Should the basis become larger than expected, the producer that is using a hedge for outputs receives a lower than expected price, and the buyer hedging inputs enjoys a lower than expected price (Fig. 41).

Fig. 41 — The Basis Doesn't Stay Constant. There May Be Unexpected Movement.

There are two other hedging costs that should be considered:

- Commission costs are charged by those who carry out hedging operations.
- Interest costs are incurred on the margin money required by the broker.

SELL ON THE CASH MARKET AND SPECULATE IN FUTURE MARKETS

Another marketing strategy is to sell at the end of the production cycle and speculate with a futures contract (Fig. 42). Ron Field, a grain farmer in Washington studies this strategy and finds that someone other than the producer (himself) bears the costs of storage. Ron finds that he can sell his grain immediately at harvest and invest the proceeds.

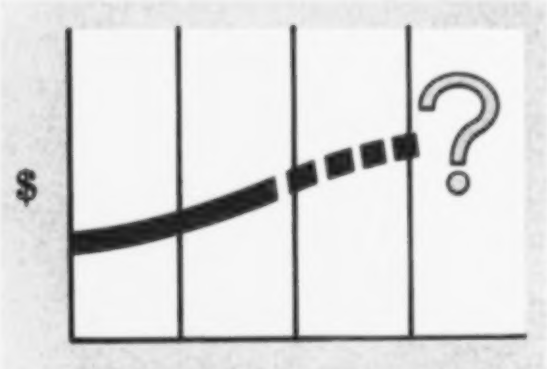


Fig. 42 — Another Strategy Is To Sell The Product And Speculate With The Returns

First, Ron expects the price of grain to decrease, so he sells his grain on the cash market. In a futures contract, Ron promises to deliver a specified quantity of his grain to a specified location on the maturity date of the contract. Ron sells a futures contract on the commodities market for a set price. Jerry Smith, a grain buyer who expects the price of grain to increase, buys a futures contract on the futures market. This purchase entitles the grain buyer to receive the grain at a specified date for an established price.

If Jerry's expectations are realized and the price goes up he has two options:

- First, he can sell his futures contract to someone else. That cancels delivery of the commodity to him. He makes a profit, and will never take delivery of the grain.
- Second, he can accept delivery of the higher priced grain.

Selling the contract rather than accepting the grain is most common in this situation.

Obviously, if prices fall rather than increase then Jerry as owner of the contract suffers a loss when he sells.

But what about Ron Field. What advantages and disadvantages are there for him?

Ron gets cash for his grain and invests his money in a futures contract. He must pay some extra costs to play the futures market. Ron pays seller's commission charges to the broker to negotiate the purchase of the contract. In addition, the broker requires the seller to maintain a margin account (money on deposit).

The margin account is to cover potential losses in the futures market. It is a percentage of the contract price. If Ron borrows money or the margin account, then he pays the additional cost of interest charges. Ron must buy a futures contract or deliver grain at the end of the contract period. He speculates that grain prices will drop. If prices rise Ron loses money.

Commodity Options

Agricultural commodity options have recently started trading at several commodity exchanges. Options may provide producers a unique risk management alternative for the marketing of their commodities. The option can limit the buyer's risk while retaining the potential for unlimited profits.

TWO TYPES OF OPTIONS

The two types of options are:

- Put
- Call

A "put" option protects the buyer from a price decrease while leaving open the possibility to pursue any price increases. This then gives the right but not the obligation to sell a futures contract at the stated exercise price.

A "call" option is similar, but provides the buyer protection from a price increase while maintaining the ability to follow a declining price. A "call" owner has the right, but is not obligated, to buy a futures contract at a specified price.

PRINCIPLE COMPONENTS OF AN OPTION

The principle components of an option include:

- Premium price
- Underlying futures price
- Strike (exercise) price
- Short-term interest rate
- Days to expiration

The option premium price is the sum of its intrinsic value and time value. An option's strike (exercise) price is the price at which the owner may exercise the right to buy (in case of a call) or sell (in case of a put) the underlying futures contract. The strike price can be "in, out, or at the money".

This condition affects the option premium price. The interest rate should represent the short-term-risk-free borrowing and lending rates and should have a duration close to the remaining life of the option. The days to expiration include the number of calendar days between the option's purchase date and expiration date.

The expiration date is dependent upon the underlying commodity futures contract, but will always be several business days prior to the first notice day (delivery) of that futures contract. For example, the soybean option expiration date is the Friday at least ten business days prior to the contract's first notice day.

Using Options As A Marketing Tool

As with any new tool, the farmer or rancher needs to evaluate whether or not to enter the options market. You need to make the marketing decision based on:

- Comparing options against other available means to sell the commodity including hedge and cash sale.
- Present price conditions
- The price outlook
- What your net price received would be after marketing costs

SUMMARY OF MARKET STRATEGIES

These are some marketing strategies that you can use to market agricultural products. No single strategy is best. Keep in mind that there are always new ideas. The point is, be aware that marketing is not just selling your product. Marketing is a strategy for converting your product into cash in a safe and profitable way.

USING MARKET OUTLOOK INFORMATION

Before you make decisions about a marketing strategy make a careful study of the market. Market outlook information provides data for proper study. Market outlook information by its very nature is less than perfect. It is not unusual for two reputable analysts to disagree by $5.00 or even $10.00 on the projected level of cattle prices that are 6 to 9 months in the future (Fig. 43).

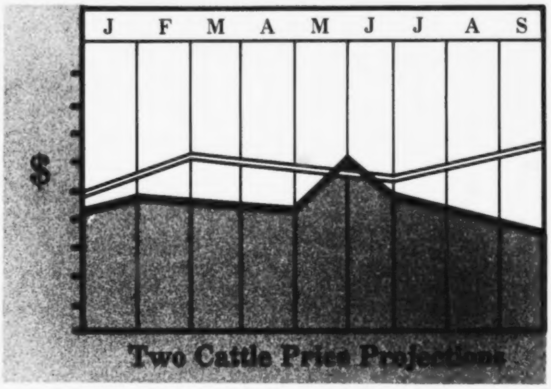


Fig. 43 — Outlook Information Varies. Be Cautious.

An outlook price is a projection of prices into the future. Supply, demand, and price relationships help make a projection. If information is wrong, the projection will be wrong. If the assumptions concerning demand are off, the projection will not accurately map the future trend of prices. So, if you use outlook information, be cautious. Make sure the information is as current as possible.

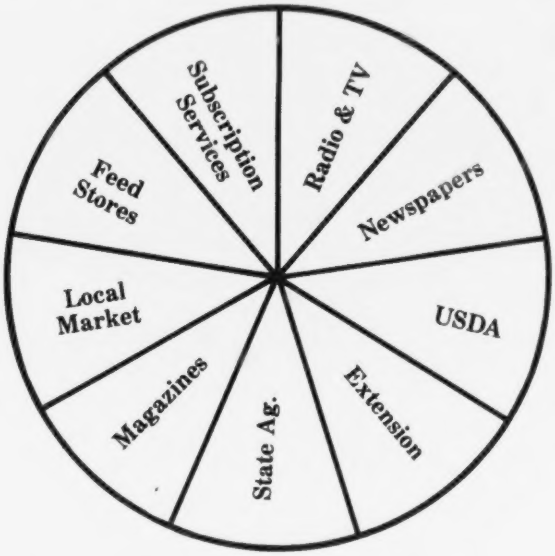


Fig. 44 — There Are Nine Market Outlook Voices

SOURCES OF MARKET OUTLOOK INFORMATION

While much of the available outlook information originates in the United States Department of Agriculture (USDA) and University Extension Services you may obtain information from (Fig. 44):

- Radio and television
- Newspapers
- U.S. Department of Agriculture reports
- University Extension Service reports
- State Department of Agriculture reports
- Farm magazines
- Local elevators or markets
- Feed stores
- Subscription services

(There are private firms which provide their outlook services, provide additional information, and frequently interpret USDA and Extension outlook information.)

THE MARKETER

Most farm and ranch operations have goals which require effective marketing. Some do a good job of reaching their marketing goals, while others do not.

Here is a list of characteristics that marketers have:

- Marketing orientation — Be aggressive. Find new sources of inputs, new places to market (Fig. 45), opportunities for new products, and new combinations of marketing strategies.

Fig. 45 — Be Aggressive

- Knowledge of marketing institutions — Marketing management is complex. Know the marketing system and the technical terms routinely used in marketing. Farm magazines (Fig. 46), short courses, and marketing books are available.

- Knowledge of production costs — Know when a particular price offers an opportunity for profit. Know your production cost (Fig. 47) so that you know your bottom line price. Good record keeping is essential.

- Marketing plan — Have a plan (Fig. 48). Just as financial planning is important, effective marketing also requires planning. Develop a written plan that lists all the potential marketing strategies. A carefully developed marketing plan will help you deal with lenders, brokers, landlords, and employees. No two marketing plans are alike. Marketing plans reflect your individual business. Following the crowd, neighbors, and friends is seldom a substitute for developing a market plan of your own.

Fig. 46 — Learn About The Market

Fig. 47 — Know Costs And Keep Good Records

Fig. 48 — Make A Plan

- Market information — National and international developments directly affect input and commodity prices. You need access to the same information others in the marketing channels are using for decision making. Keep informed.

- Professional assistance — Knowledgeable people can help you make marketing decisions (Fig. 49). You make the decisions, but get the opinions of others. Talk to:

  - brokers
  - elevator managers
  - salespeople
  - private consultants
  - extension and research people

Fig. 49 — Get Help

- Discipline — Have self discipline. Avoid an emotional involvement with the market. Some decisions will prove wrong. Accept the fact that you made a wrong decision, and move on to the next. Be profit oriented to the market, but do not let greed dominate. An assured, acceptable price is much better than the hope of selling at a market peak (Fig. 50).

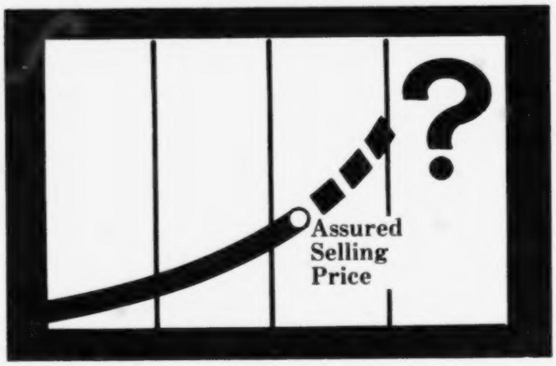


Fig. 50 — Be Disciplined. You Will Win And You Will Lose. Always Plan For A Profit

- Negotiating skills — There is no single price. The smart marketer always seeks to buy at the lower end of the price range and sell at the upper end (Fig. 51) without simply accepting the asked or bid price. Look for opportunities. Be observant and do your homework before entering into negotiations.

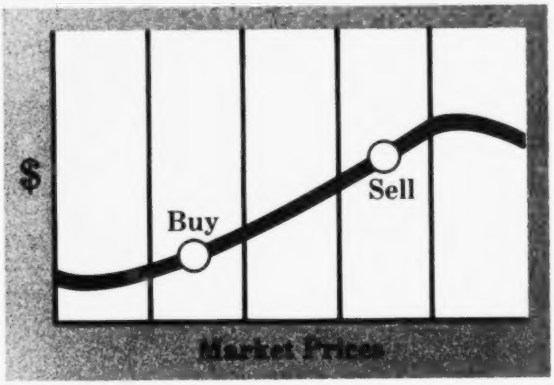


Fig. 51 — Buy Low And Sell High

INVESTMENT ANALYSIS

CHAPTER 8

ANALYZE BEFORE YOU INVEST

You know that you should invest surplus funds so that they can work for you. The question is, where do you invest? You need to know how to figure out which investments are right for your particular situation. The most practical way to do this is to analyze likely prospects and compare investments with each other, category by category, to find out which pays the highest return (Fig. 1).

Fig. 1 — Compare Investments Directly To Each Other

You must learn some basic terms and concepts before you can analyze investments. Here is the information that you need to get started.

CAPITAL

The first thing that you need to know is the amount of capital that is required for each investment (Fig. 2). Capital requirements will give you a fast comparison.

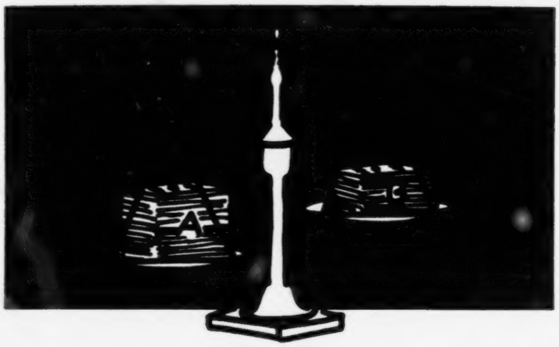


Fig. 2 — Compare The Capital That Is Required For Each Investment

THE INDEX OF PROFITABILITY

The second thing that you need is an index to measure the investments. A good index is the "Index of Profitability" (Fig. 3).

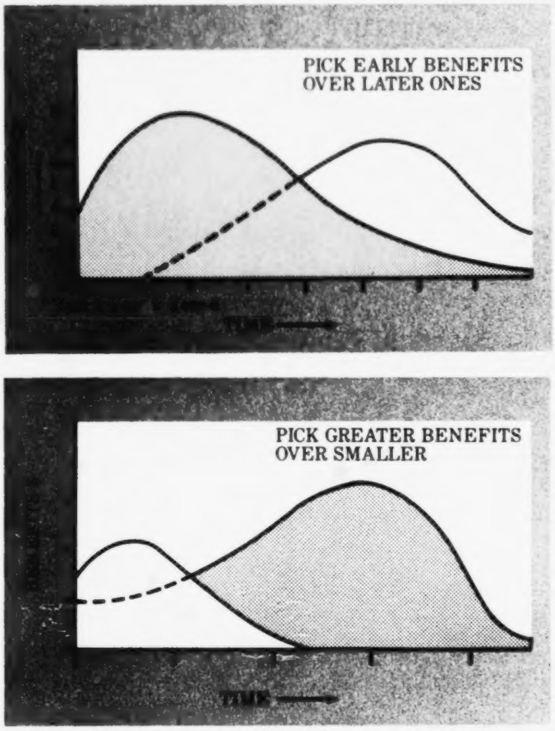


Fig. 3 — The Index Of Profitability Is Used To Measure Investments

Basically the Index of Profitability will show that you should:

- Pick early benefits over later benefits. Choose investments that will give you the earliest return.
- Pick greater benefits over smaller ones. Choose an investment that gives you the overall best return.

To use the index to its fullest, you need to understand the time value of money.

THE TIME VALUE OF MONEY

You have to understand how time affects money to evaluate the importance of the index. The value of a sum of money increases or decreases as time passes.

Inflation reduces the value of money. Deflation increases the value of money (Fig. 4).

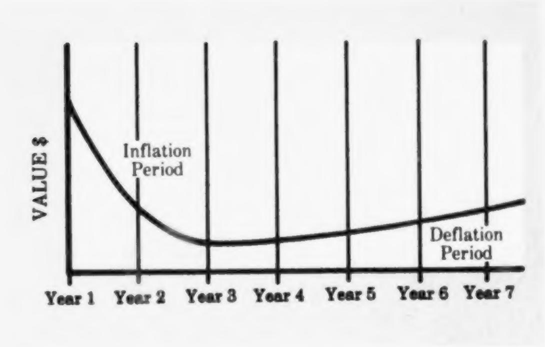


Fig. 4 — Time Affects The Value Of Money

INTEREST

The amount of money in an investment can change too. Interest earned increases the amount of money. Loss due to risk, of course, reduces the amount of money.

Suppose that you loan someone a dollar for one year at 8 percent **simple** interest. In a year the dollar is worth a dollar principal plus 8 cents interest for a total of $1.08.

What if the time is longer? If you loan someone $1.00 at 8 percent for two years, then you receive $1.16 simple interest. Your amount of money increases (Fig. 5) from $1.00 to $1.16 in two years.

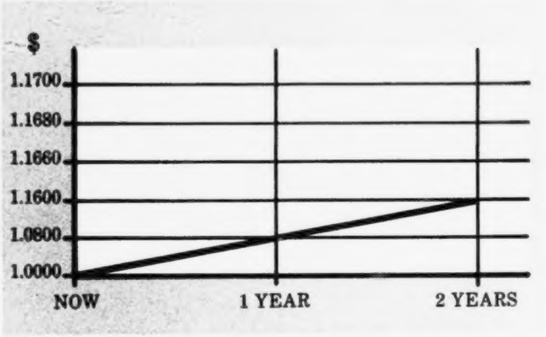


Fig. 5 — Simple Interest Increases The Value Of Money

COMPOUNDING

When the time is extended, earned interest is usually COMPOUNDED. This way the $.08 interest earned at the end of the first year is added to the principal and you earn interest on $1.08 the second year (Fig. 6). You get interest on the interest. You earn $1.1664 with a compound interest investment.

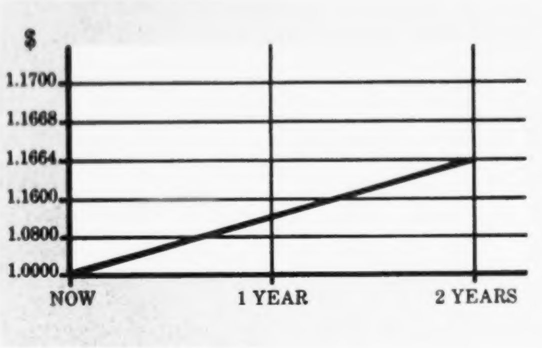


Fig. 6 — Compound Pays Interest On The Interest

Compounding has another meaning too. In investment analysis think of compounding as a calculation that you do to an amount of money that you have to find out how much it will be worth in the future. If you know how much you have to invest, then compounding will tell you **how much you can earn.**

If you **compound** a sum of money, then you calculate its value at a future time (Fig. 7).

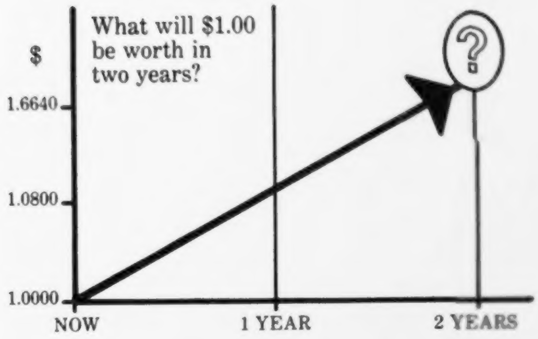


Fig. 7 — Compounding Tells You Value At A Future Time

DISCOUNTING

Discounting is the opposite of compounding. It is the calculation that you do to an amount of money to be received at a future date. This will tell you what it is worth now (Fig. 8). Also, if you know how much you must earn in the future, then discounting tells you **how much to invest.**

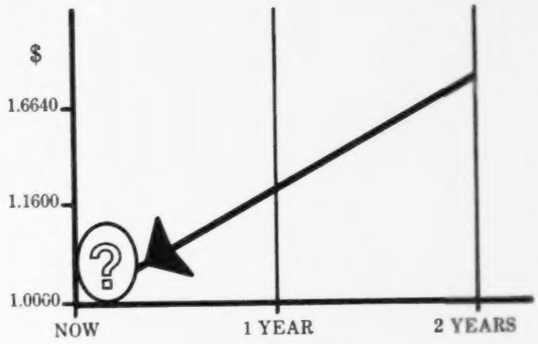


Fig. 8 — Discounting Is The Opposite Of Compounding

SUMMARY

You must compare investment opportunities to tell which is best for your particular situation.

The first thing that you need to compare is the capital required. To do this you can apply the Index of Profitability which is:

- Take early benefits over later ones
- Take larger benefits over smaller ones

The value of money changes. Inflation cheapens it and deflation enriches it. Also, the amount of money in an investment changes. It either increases from such things as interest earned, or it decreases as the investment loses value.

Compounding interest lets you make interest on your earned interest. Compounding also is calculating the future value of a sum of money invested now. It tells you how much you can earn.

The opposite of compounding is discounting. Discounting calculates the present value of a sum of money to be received in the future. It also tells you how much to invest to earn a certain amount in the future.

COMPOUNDING TABLES

Use tables to find compounded and discounted amounts. The compounding tables (Fig. 9) give you the future values of $1.00 compounded at different interest and time periods. To find out what the value of $1.00 that is invested today at 5 percent will be in one year, find the intersection of 5 percent and one year in Fig. 9 ($1.05). It is circled for your convenience. What is the value of $250 placed in a savings account at 10 percent interest for ten years? The table shows that $1.00 becomes $2.5937. You have $250. You must multiply the 2.5937 times your $250. You get $648.43. This is the amount that you would receive on the investment of $250 in 10 years at 10 percent per year interest.

Table 1

Future Value at Compound Interest

$FV = (1 + i)^n$

Year	4%	5%	6%	7%	8%	9%	10%	11%	12%
1	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200
2	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100	1.2321	1.2544
3	1.1248	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310	1.3676	1.4049
4	1.1698	1.2155	1.2624	1.3107	1.3604	1.4115	1.4641	1.5180	1.5735
5	1.2166	1.2762	1.3382	1.4025	1.4693	1.5386	1.6105	1.6850	1.7623
6	1.2653	1.3400	1.4185	1.5007	1.5868	1.6771	1.7715	1.8704	1.9738
7	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487	2.0761	2.2106
8	1.3685	1.4774	1.5938	1.7181	1.8509	1.9925	2.1435	2.3045	2.4759
9	1.4233	1.5513	1.6894	1.8384	1.9990	2.1718	2.3579	2.5580	2.7730
10	1.4802	1.6288	1.7908	1.9671	2.1589	2.3673	**2.5937**	2.8394	3.1058
11	1.5394	1.7103	1.8982	2.1048	2.3316	2.5804	2.8531	3.1517	3.4785
12	1.6010	1.7958	2.0121	2.2521	2.5181	2.8126	3.1384	3.4984	3.8959
13	1.6650	1.8856	2.1329	2.4098	2.7196	3.0658	3.4522	3.8832	4.3634
14	1.7316	1.9799	2.2609	2.5785	2.9371	3.3417	3.7974	4.3104	4.8871
15	1.8009	2.0789	2.3965	2.7590	3.1721	3.6424	4.1772	4.7845	5.4735
16	1.8729	2.1828	2.5403	2.9521	3.4259	3.9703	4.5949	5.3108	6.1303
17	1.9479	2.2920	2.6927	3.1588	3.7000	4.3276	5.0544	5.8950	6.8660
18	2.0258	2.4066	2.8543	3.3799	3.9960	4.7171	5.5599	6.5435	7.6899
19	2.1068	2.5269	3.0255	3.6165	4.3157	5.1416	6.1159	7.2633	8.6127
20	2.1911	2.6532	3.2071	3.8696	4.6609	5.6044	6.7274	8.0623	9.6462
25	2.6658	3.3863	4.2918	5.4274	6.8484	8.6230	10.8347	13.5854	17.0000
30	3.2433	4.3219	5.7434	7.6122	10.0626	13.2676	17.4494	22.8922	29.9599
35	3.9460	5.5160	7.6860	10.6765	14.7853	20.4139	28.1024	38.5748	52.7996
40	4.8010	7.0399	10.2857	14.9744	21.7245	31.4094	45.2592	65.0008	93.0509

Table 1, cont'd

Year	13%	14%	15%	16%	17%	18%	19%	20%
1	1.1300	1.1400	1.1500	1.1600	1.1700	1.1800	1.1900	1.2000
2	1.2769	1.2996	1.3225	1.3456	1.3689	1.3924	1.4161	1.4400
3	1.4428	1.4815	1.5208	1.5608	1.6016	1.6430	1.6851	1.7280
4	1.6304	1.6889	1.7490	1.8106	1.8738	1.9387	2.0053	2.0736
5	1.8424	1.9254	2.0113	2.1003	2.1924	2.2877	2.3863	2.4883
6	2.0819	2.1949	2.3130	2.4363	2.5651	2.6995	2.8397	2.9859
7	2.3526	2.5022	2.6600	2.8262	3.0012	3.1854	3.3793	3.5831
8	2.6584	2.8525	3.0590	3.2784	3.5114	3.7588	4.0213	4.2998
9	3.0040	3.2519	3.5178	3.8029	4.1084	4.4354	4.7854	5.1597
10	3.3945	3.7072	4.0455	4.4114	4.8068	5.2338	5.6946	6.1917
11	3.8358	4.2262	4.6523	5.1172	5.6239	6.1759	6.7766	7.4300
12	4.3345	4.8179	5.3502	5.9360	6.5800	7.2875	8.0642	8.9161
13	4.8980	5.4924	6.1527	6.8857	7.6986	8.5993	9.5964	10.6993
14	5.5347	6.2613	7.0757	7.9875	9.0074	10.1472	11.4197	12.8391
15	6.2542	7.1379	8.1370	9.2655	10.5387	11.9737	13.5895	15.4070
16	7.0673	8.1372	9.3576	10.7480	12.3303	14.1290	16.1715	18.4884
17	7.9860	9.2764	10.7612	12.4676	14.4264	16.6722	19.2441	22.1861
18	9.0242	10.5751	12.3754	14.4625	16.8789	19.6732	22.9005	26.6233
19	10.1974	12.0556	14.2317	16.7765	19.7483	23.2144	27.2516	31.9479
20	11.5230	13.7434	16.3665	19.4607	23.1055	27.3930	32.4294	38.3375
25	21.2305	26.4619	32.9189	40.8742	50.6578	62.6686	77.3880	95.3962
30	39.1158	50.9501	66.2117	85.8498	111.0646	143.3706	184.6752	237.3762
35	72.0685	98.1001	133.1755	180.3140	243.5034	327.9972	440.7005	590.6681
40	132.7815	188.8834	267.8635	378.7211	533.8686	750.3782	1051.6674	1469.7713

Fig. 9 — Compounding Table

DISCOUNTING TABLES

Now look at the investment from the other end. Discount it by using the discounting table (Fig. 10). The discount rate for $1.00 in 10 years from now at 10 percent is .3855. Do you see it at the intersection of 10 percent and 10 years? It is circled for your convenience. Multiply the end value of the investment ($648.43) times the discount factor (.3855) and you get $249.97. The reason that the sum does not exactly equal the $250 that you originally invested is due to rounding error. Discounting and compounding are calculations of the opposite ends of the growth line of money that is placed in an investment. Each checks the other.

Table 2

Present Value of 1

$PV = 1/(1+i)^n$

Year	4%	5%	6%	7%	8%	9%	10%	11%
1	0.9615	0.9523	0.9433	0.9345	0.9259	0.9174	0.9090	0.9009
2	0.9245	0.9070	0.8899	0.8734	0.8573	0.8416	0.8264	0.8116
3	0.8889	0.8638	0.8396	0.8163	0.7938	0.7721	0.7513	0.7311
4	0.8548	0.8227	0.7920	0.7629	0.7350	0.7084	0.6830	0.6587
5	0.8219	0.7835	0.7472	0.7130	0.6805	0.6499	0.6209	0.5934
6	0.7903	0.7462	0.7049	0.6663	0.6301	0.5962	0.5644	0.5346
7	0.7599	0.7106	0.6650	0.6227	0.5834	0.5470	0.5131	0.4817
8	0.7306	0.6768	0.6274	0.5820	0.5402	0.5018	0.4665	0.4339
9	0.7025	0.6446	0.5918	0.5439	0.5002	0.4604	0.4240	0.3909
10	0.6755	0.6139	0.5583	0.5083	0.4631	0.4224	**0.3855**	0.3521
11	0.6495	0.5846	0.5267	0.4751	0.4288	0.3875	0.3509	0.3172
12	0.6245	0.5568	0.4969	0.4440	0.3971	0.3555	0.3186	0.2858
13	0.6005	0.5303	0.4688	0.4150	0.3676	0.3262	0.2896	0.2575
14	0.5774	0.5050	0.4423	0.3878	0.3404	0.2992	0.2633	0.2319
15	0.5552	0.4810	0.4172	0.3624	0.3152	0.2745	0.2393	0.2090
16	0.5339	0.4581	0.3936	0.3387	0.2918	0.2518	0.2176	0.1882
17	0.5133	0.4362	0.3713	0.3166	0.2702	0.2310	0.1978	0.1696
18	0.4936	0.4155	0.3503	0.2959	0.2502	0.2119	0.1798	0.1528
19	0.4746	0.3957	0.3305	0.2765	0.2317	0.1944	0.1635	0.1376
20	0.4563	0.3768	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240
25	0.3751	0.2953	0.2329	0.1842	0.1460	0.1159	0.0922	0.0736
30	0.3083	0.2313	0.1741	0.1314	0.0993	0.0753	0.0573	0.0436
35	0.2534	0.1812	0.1301	0.0936	0.0676	0.0489	0.0355	0.0259
40	0.2082	0.1420	0.0972	0.0668	0.0460	0.0318	0.0220	0.0153

Table 2, cont'd

Year	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.8928	0.8849	0.8771	0.8695	0.8620	0.8547	0.8474	0.8403	0.8333
2	0.7971	0.7831	0.7694	0.7561	0.7431	0.7305	0.7181	0.7061	0.6944
3	0.7117	0.6930	0.6749	0.6575	0.6406	0.6243	0.6086	0.5934	0.5787
4	0.6355	0.6133	0.5920	0.5717	0.5522	0.5336	0.5157	0.4986	0.4822
5	0.5674	0.5427	0.5193	0.4971	0.4761	0.4561	0.4371	0.4190	0.4018
6	0.5066	0.4803	0.4555	0.4323	0.4104	0.3898	0.3704	0.3521	0.3348
7	0.4523	0.4250	0.3996	0.3759	0.3538	0.3331	0.3139	0.2959	0.2790
8	0.4038	0.3761	0.3505	0.3269	0.3050	0.2847	0.2660	0.2486	0.2325
9	0.3606	0.3328	0.3075	0.2842	0.2629	0.2434	0.2254	0.2089	0.1938
10	0.3219	0.2945	0.2697	0.2471	0.2266	0.2080	0.1910	0.1756	0.1615
11	0.2874	0.2606	0.2366	0.2149	0.1954	0.1778	0.1619	0.1475	0.1345
12	0.2566	0.2307	0.2075	0.1869	0.1684	0.1519	0.1372	0.1240	0.1121
13	0.2291	0.2042	0.1820	0.1625	0.1452	0.1298	0.1162	0.1042	0.0934
14	0.2046	0.1806	0.1597	0.1413	0.1251	0.1110	0.0985	0.0875	0.0778
15	0.1826	0.1598	0.1400	0.1228	0.1079	0.0948	0.0835	0.0735	0.0649
16	0.1631	0.1414	0.1228	0.1068	0.0930	0.0811	0.0707	0.0618	0.0540
17	0.1456	0.1252	0.1077	0.0929	0.0802	0.0693	0.0599	0.0519	0.0450
18	0.1300	0.1108	0.0946	0.0808	0.0691	0.0592	0.0508	0.0436	0.0375
19	0.1161	0.0980	0.0829	0.0702	0.0596	0.0506	0.0430	0.0366	0.0313
20	0.1036	0.0867	0.0728	0.0611	0.0513	0.0432	0.0365	0.0308	0.0260
25	0.0588	0.0471	0.0378	0.0303	0.0244	0.0197	0.0159	0.0129	0.0104
30	0.0333	0.0255	0.0196	0.0151	0.0116	0.0090	0.0069	0.0054	0.0042
35	0.0189	0.0138	0.0101	0.0075	0.0055	0.0041	0.0030	0.0022	0.0016
40	0.0107	0.0075	0.0052	0.0037	0.0026	0.0018	0.0013	0.0009	0.0006

Fig. 10 — A Discounting Table

ANNUITIES

Annuities are investments paid as yearly dividends. To compare annuities you must write down the benefits of the annuities so that you can compare them directly to one another.

To find the discounted (present) value of an 8 percent, 5-year, $100 per year annuity, use the annuity table (Fig. 11).

Find the number at the intersection of 8 percent and five years (3.9927). It is circled for your convenience. Then multiply the 3.9927 by $100 to get $399.27. If you are given $100.00 every year for 5 years, you will receive the same amount of money as you would if you were given $399.27 today.

Table 4

Present Value of Annuity of $1

Year	4%	5%	6%	7%	8%	9%	10%	11%
1	.9615	.9524	.9434	.9346	.9259	.9174	.9091	.9009
2	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125
3	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4868	2.4437
4	3.6299	3.5459	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024
5	4.4518	4.3295	4.2124	4.1002	**3.9927**	3.8896	3.7908	3.6959
6	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305
7	6.0020	5.7864	5.5824	5.3893	5.2064	5.0329	4.8684	4.7122
8	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	5.1461
9	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370
10	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892
11	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	6.2065
12	9.3851	8.8632	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924
13	9.9856	9.3936	8.8527	8.3576	7.9038	7.4869	7.1034	6.7499
14	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.9819
15	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909
16	11.6523	10.8378	10.1059	9.4467	8.8514	8.3126	7.8237	7.3792
17	12.1657	11.2741	10.4773	9.7632	9.1216	8.5436	8.0216	7.5488
18	12.6593	11.6896	10.8276	10.0591	9.3719	8.7556	8.2014	7.7016
19	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649	7.8393
20	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5135	7.9633
25	15.6221	14.0939	12.7834	11.6536	10.6748	9.8226	9.0770	8.4217
30	17.2920	15.3724	13.7648	12.4090	11.2578	10.2736	9.4269	8.6938
35	18.6646	16.3742	14.4982	12.9477	11.6546	10.5668	9.6442	8.8552
40	19.7928	17.1591	15.0463	13.3317	11.9246	10.7574	9.7790	8.9511

Table 4, cont'd

Year	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	.8929	.8850	.8772	.8696	.8621	.8547	.8475	.8403	.8333
2	1.6901	1.6681	1.6467	1.6257	1.6052	1.5852	1.5656	1.5465	1.5278
3	2.4018	2.3611	2.3216	2.2832	2.2459	2.2096	2.1743	2.1399	2.1065
4	3.0373	2.9745	2.9137	2.8549	2.7982	2.7432	2.6901	2.6386	2.5887
5	3.6048	3.5172	3.4331	3.3522	3.2743	3.1993	3.1272	3.0576	2.9906
6	4.1114	3.9975	3.8887	3.7845	3.6847	3.5892	3.4976	3.4098	3.3255
7	4.5638	4.4226	4.2883	4.1604	4.0386	3.9224	3.8115	3.7057	3.6046
8	4.9676	4.7988	4.6389	4.4873	4.3436	4.2072	4.0776	3.9544	3.8372
9	5.3282	5.1317	4.9464	4.7716	4.6065	4.4506	4.3030	4.1633	4.0310
10	5.6502	5.4262	5.2161	5.0188	4.8332	4.6586	4.4941	4.3389	4.1925
11	5.9377	5.6869	5.4527	5.2337	5.0286	4.8364	4.6560	4.4865	4.3271
12	6.1944	5.9176	5.6603	5.4206	5.1971	4.9884	4.7932	4.6105	4.4392
13	6.4235	6.1218	5.8424	5.5831	5.3423	5.1183	4.9095	4.7147	4.5327
14	6.6282	6.3025	6.0021	5.7245	5.4675	5.2293	5.0081	4.8023	4.6106
15	6.8109	6.4624	6.1422	5.8474	5.5754	5.3242	5.0916	4.8759	4.6755
16	6.9740	6.6039	6.2651	5.9542	5.6685	5.4053	5.1624	4.9377	4.7296
17	7.1196	6.7291	6.3729	6.0472	5.7487	5.4746	5.2223	4.9897	4.7746
18	7.2497	6.8399	6.5504	6.1280	5.8178	5.5339	5.2732	5.0333	4.8122
19	7.3658	6.9380	6.6231	6.1982	5.8774	5.5845	5.3162	5.0700	4.8435
20	7.4694	7.0248	6.6869	6.2593	5.9288	5.6278	5.3527	5.1009	4.8696
25	7.8431	7.3300	6.8729	6.4641	6.0971	5.7662	5.4669	5.1951	4.9476
30	8.0552	7.4956	7.0027	6.5660	6.1772	5.8294	5.5168	5.2346	4.9789
35	8.1755	7.5856	7.0700	6.6166	6.2153	5.8582	5.5386	5.2512	4.9915
40	8.2438	7.6344	7.1050	6.6418	6.2335	5.8713	5.5481	5.2581	4.9966

Fig. 11 — An Annuity Table

A PARTIAL INVESTMENT ANALYSIS

Now let us see how this knowledge can be put to work. First, lets look at a partial analysis of a real investment situation. William Larson must make a decision. His grandmother gives him $1,000. She suggests that he place the $1,000 in a savings account at the local bank, and let the interest accrue. William is now a freshman in high school and plans to use the money for college tuition. The money has 4 years to earn interest. How much money does William have at the end of four years if he gets 9% on a $1000 savings account.

Solution: Look up the compound rate (1.4115) in the compounding table (Fig. 9). It is at the intersection of 4 years and 9 percent. William earns $1,410 in four years with his $1,000.

$1,000 x 1.41 = $1,410

However, William has hog facilities that he is using for an FFA project. With $1,000, he can purchase 4 hybrid gilts. William has a choice to make (Fig. 12). His calculations show that he would expect to earn $200 each year above all costs with the hogs. This is a very conservative estimate using low market prices and high feed costs. In addition, at the end of 4 years, he can sell the sows for about $150 each ($600). What is best for William?

Fig. 12 — William Must Analyze His Returns

He must take the $200 annual earnings, and move it through time to see how much he will have when he goes to college.

This is William's investment analysis:

	Annual Earnings		Compounded at 9% Interest [All figures have been rounded].		Future Value [Col. 1 × Col. 2]
Year 0					
Year 1	200	×	1.41	=	$282
Year 2	200	×	1.30	=	260
Year 3	200	×	1.19	=	238
Year 4	200	×	1.09	=	218
				sum	$998
			Adding market value of sows		$600
					$1598

William's money, if he puts it in the bank immediately when Grandma gives him the gift, will amount to $1,410 when he goes to college. If William invests in the 4 sows he will have $188 more dollars ($1,598 - $1410 = $188) at the end of four years if his enterprise goes as planned. There are a few more aspects to consider in a partial investment analysis as you will see.

COMPOUNDING AND DISCOUNTING RATES

The compounding rates that William uses makes a difference in the money that he earns. The compounding rate that is chosen is a matter of judgment, not a fixed fact. How do you choose it?

The rate must be your "opportunity cost" of capital. It is the rate of return that you **could** earn with your best alternative use of the money.

If you must borrow the money, the investment must return enough to repay the loan just to break even. If the loan interest rate is 12%, use a 12 percent or more discount rate in your investment analysis. You **must earn** 12% profit with your investment just to break even.

Suppose you have money in an investment fund that gives you 10 percent interest per year. Suppose that interest money is enough for your investment. Your opportunity cost is 10 percent (Fig. 13). Compound it at a 10 percent rate because that is what you **could** earn if you left the money in a savings account.

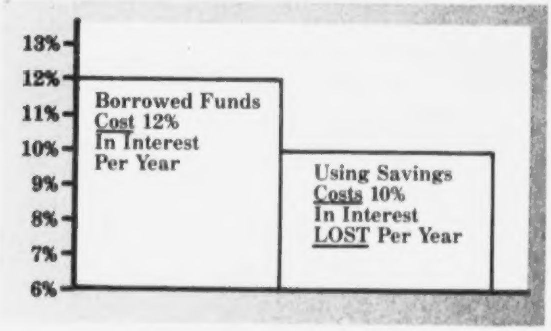


Fig. 13 — Compare Your Opportunity Costs With Your Investment

Rates vary between individuals depending on their financial situation. Sometimes you may be in debt and have to borrow capital. Sometimes you may use savings for capital. We will look at more on these conditions in the next section on FULL INVESTMENT ANALYSIS.

SUMMARY

You must compare investments to get an accurate evaluation.

There are two major investment concepts:

- Index of profitability
- Time value of money
  - Compounding
  - Discounting

You can use arithmetic to make a partial analysis of investments. You also can use the three tables:

- Table for compounding
- Table for discounting
- Annuity tables

The compounding and discount rates that you use will change your profits.

- There is no one compounding and discount rate for everyone.
- The rates may change for you from time to time.
- The rates depend on the rate of return that you want from your investment.

FULL INVESTMENT ANALYSIS

Now that we have looked at the terms and concepts of investment analysis we are ready to do a full investment analysis.

We will look at the Payback Analysis technique. Then we will look at the Present Worth Technique. Following those discussions some of the fine points such as taxes, feasibility, and risk will be covered.

PAYBACK ANALYSIS

There is an index of profitability for each analysis technique. The index of profitability (decision rule) for the payback analysis technique is the time that is required for the cash income from the investment to return the initial investment outlay (Fig. 14). The time is up to you. You choose it depending on what you want. If you choose four years and an investment doesn't return the initial cost by year 4, you don't want it. If you borrow money for an investment, the payback time must be the same or shorter than the length of the loan. If you are investing savings, you can use a longer payback term.

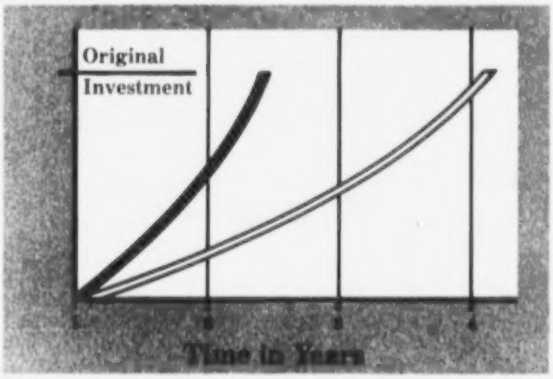


Fig. 14 — The Index Of Profitability Is The Time Required For Income To Equal The Initial Investment (Solid Line).

The Don Smith Cattle Company (Fig.15) makes money by carrying steers through the winter on winter pasture and by selling them to feed lots in the spring. Don Smith wants to invest his profits. He narrows his choice to Investment A and Investment B. Don uses the payback method to analyze the two investments. Both investments cost $1,000. Investment A has a life of 5 years. Investment B is 6 years. Their predetermined profitability index (cut-off date) is 4 years. Here is what they look like on paper (Fig. 16).

Fig. 15 — The Don Smith Cattle Company Carries Steers Through The Winter

Year	A Cash flow*	B Cash flow*
1	500	100
2	400	200
3	300**	300
4	200	400**
5	100	500
6		600

*Cash flow is gross income minus variable costs.
**Indicates year in which initial investment outlay is repaid.

Fig. 16 — Don Smith Compares Investments Side-By-Side

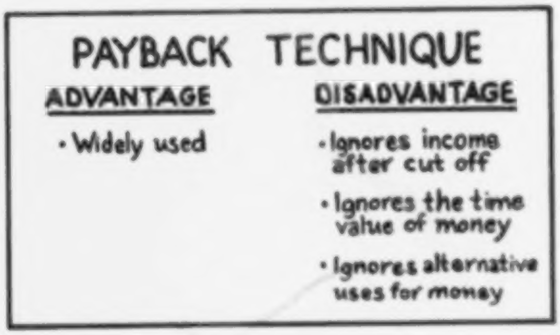
Investment A returns $900 of the $1,000 at the end of the second year ($500 to $400). The third year there is a return of $300, but only $100 of this amount is required to cover the complete initial cost of $1,000. Divide the $100 needed in year three by the return of $300 to get the portion of year 3 income needed to pay off the initial investment.

$$\frac{100}{300} = .3$$

So, Investment A has a payback of 2.3 years.

On the other hand, Investment B doesn't return the $1,000 until the end of the fourth year. Since 4 years is the predetermined index of profitability (cut-off time), both Investments A and B are acceptable. However, if only one investment can be made, Investment A is best, because it returns the cost in 2.3 years instead of 4 years.

The payback technique is widely used. It has three disadvantages (Fig. 17):



PAYBACK TECHNIQUE

ADVANTAGE	DISADVANTAGE
• Widely used	• Ignores income after cut off
	• Ignores the time value of money
	• Ignores alternative uses for money

Fig. 17 — The Payback Technique Does Have Disadvantages

- Benefits of an investment that occur after the cutoff period are ignored. The $500 and $600 returns in the fifth and sixth year of Investment B are ignored.

- The payback technique doesn't consider the time value of money. A dollar received during the first year is given the same weight as a dollar received in the fourth year.

- The payback method does not consider the alternative uses for money. The payback method has a discount rate of zero.

Don Smith recognizes this weakness. He wants to use an analysis technique that is more complete.

PRESENT WORTH TECHNIQUE

Don needs an investment analysis technique that includes all income, allows for the time value of money, allows for alternative uses for the money, and still keeps the index of profitability.

There is a good technique that includes all the variables that Don wants to examine. The technique is called the Present Worth method. It has two parts:

- Benefit/cost ratio
- The internal rate of return

Benefit/Cost Ratio Analysis

Don Smith, like most successful farmers and ranchers, likes the benefit/cost ratio (Fig. 18) technique. Don can calculate the benefit/cost ratio by dividing an investment's benefits by its costs:

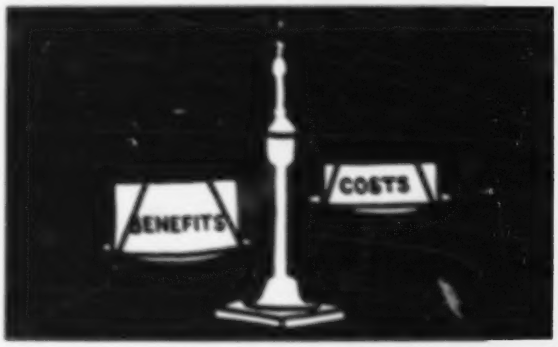


Fig. 18 — The Benefit/Cost Ratio Analysis Includes All Income

Benefits ÷ Costs = Benefit/Cost Ratio

$100 ÷ $90 = 1.1

The **index of profitability** of this technique is simple. It is the ratio between benefits and costs (1.1).

An investment must have a ratio of more than 1.0 to be profitable. A ratio of 1.0 says that benefits and costs are equal (break-even point). Don calculates and writes down the figures for his A and B investments so that he can compare them (Fig. 19). For comparison, Don uses 10, 19, and 20 percent discount rates on $1,000. He looks up the discount factors in the discounting table (Fig. 10). He discounts the cash flow for each year separately and adds the results to get the total present value of the cash flow. The present value of benefits for Investment A, when benefits are discounted at a 10 percent rate, is $1,210.

Divide the benefits by the cost to yield a cost/benefit ratio of 1.21. Find 1.21 in Fig. 19. It is circled. Since the ratio exceeds 1, Don Smith considers the investment profitable.

The benefit/cost ratio for investment B is 1.40. So, although A would be profitable, Investment B is better. It has a higher benefit/cost ratio. Investment B returns $1.40 for each $1.00 invested. Investment A only returns $1.21 for each $1.00 invested (Fig. 19).

Discounted cash flows of investments A and B: investment costs of A and B are $1,000 each

Discounted Cash Flows

Year	Discount factor and amounts at 10% rate			Discount factor and amounts at 19% rate			Discount factor and amounts at 20% rate		
	Factor	A	B	Factor	A	B	Factor	A	B
1	.91	455	91	.84	420	84	.83	415	83
2	.83	332	166	.71	284	142	.69	276	138
3	.75	225	225	.59	177	177	.58	174	174
4	.68	136	272	.50	100	200	.48	96	192
5	.62	62	310	.42	42	210	.40	33	200
6	.56		336	.35		210	.33		198
Sum of present value		1,210	1,400		1,023	1,023		994	985
Benefit/cost ratios		1.21	1.40		1.023	1.023		.994	.985

Fig. 19 — A Benefit/Cost Ratio Below 1.00 Is A Bad Investment

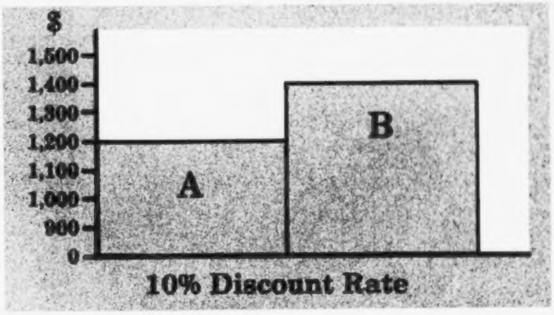


Fig. 20 — At a 10% Discount Rate, Investment B Exceeds A

Figure 19 shows more information. See how the present values of benefits change with different discount rates? As discount rates increase, present values decrease. This is caused by the cash flow changes. At the 10 percent discount rate, the present value of Investment B exceeds A by $190 (Fig. 20). Discounting at the 19 percent rate results in no difference in present value of A and B. However, at the 20 percent rate, the present value of Investment A actually exceeds B by $9.00 (Fig. 21). The discount rate is extremely important in investment analysis. With a 20 percent discount rate, Don Smith finds that A is the best investment, however, both A and B are below 1. Neither is a good investment at this rate.

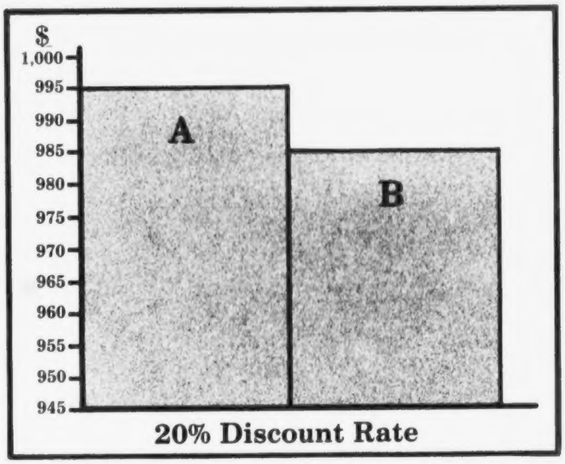


Fig. 21 — Don Found That At 20% Neither A Nor B Are Good Investments

DON FINDS SALVAGE VALUE

There is some value in an investment after it has passed its cut-off point. There is the terminal value or salvage value of the investment that often is substantial. Treat the salvage value as any other benefit that must be considered in an analysis (Fig. 22).

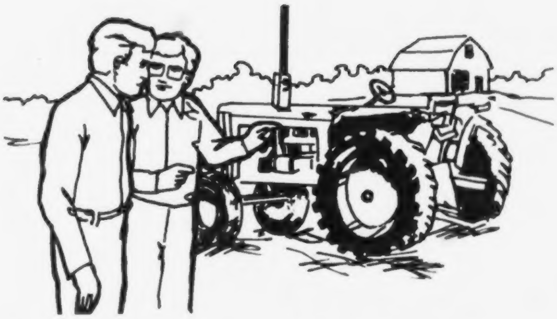


Fig. 22 — The Salvage Value Must Be Figured As A Benefit

INTERNAL RATE OF RETURN ANALYSIS

The second part of the **present worth technique** that Don Smith applies to investment analysis is the **internal rate of return.** It is often referred to as the marginal efficiency of capital, or "Fisher's rate of return." Whichever name you use, it is helpful when you consider breakeven. The internal rate of return is a number that compares the present value of **benefits** to the present value of **costs.** What this technique does is to determine the discount rate for you from the other factors in an investment.

Then you can compare your "computed rate" with the rate of return you want (Fig. 23). For example, if you must have a rate of return of 10%, and the Internal Rate of Return analysis shows you will only get 8%, **don't put your money into that investment.**

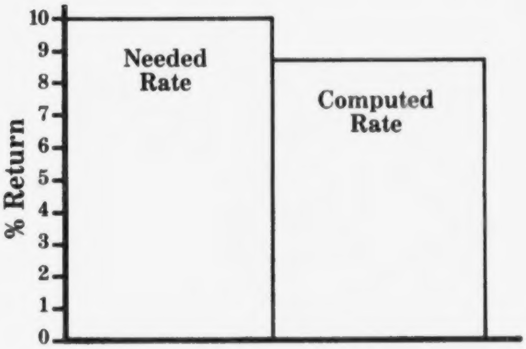


Fig. 23 — The Internal Rate Of Return Compares Your Required Rate With The Computed Rate

A major advantage of the internal rate of return technique is that you do not have to estimate a discount rate. You can calculate the discount rate. The disadvantage is the difficulty in computations. Without a computer (Fig. 24), you must rely on trial and error to find discount rates that equate cost and the discounted returns.

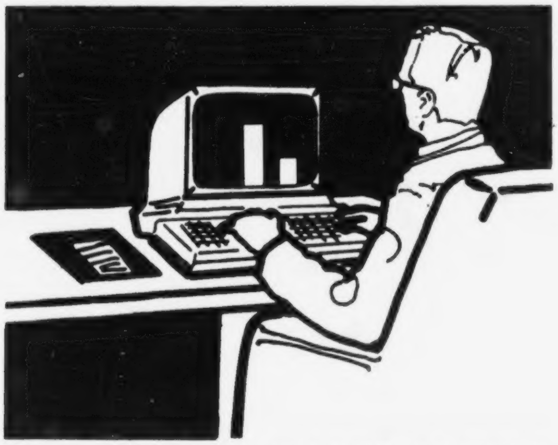


Fig. 24 — Without A Computer, It Is Difficult To Calculate A Discount

How does Don Smith determine the internal rate of return? He can use trial and error until he finds a discount rate that discounts the future returns until they equal $1,000. A look at the total present value of all benefits associated with Investment A shows that the internal rate of return is somewhere between 19 and 20 percent (Fig. 19). At a discount rate of 19 percent, the present value of benefits still exceeds the $1,000 cost by $23.00. However, discounting at a 20 percent rate results in a total present value of only $994. The internal rate is between 19 and 20. A computer and specialized program can be used to save time and calculate the exact rate.

SUMMARY

The Don Smith Cattle Company has used the payback technique. Don found it helpful, but for agriculture, Don needs the more complete analysis information produced by the present worth technique. The **present worth technique** has two parts:

- Benefit/cost ratio
- Internal rate of return

Don can divide the benefits by the costs to get a **benefit/cost** ratio. If the ratio is 1.0 the investment costs and benefits are equal. If the ratio is 1.1 the benefits outweigh the costs, and the investment should be made. If the ratio is .9 the costs outweigh the benefits and Don ignores the investment.

The second present worth technique is called **Internal Rate of Return.** It is useful because it calculates the exact discount rate or rate of return from an investment. This is a time consuming job without a computer.

TAXES

Don Smith has what he needs to analyze investments by their profit. He must now consider taxes on these profits. Taxes are important in an investment analysis (Fig. 25). Chapter 9 is devoted to taxes. The following information is an overview of what you need to know for investment analysis.

Taxes affect:

- The cost of capital after taxes
- The cash flow
- The initial cost after the investment tax credit

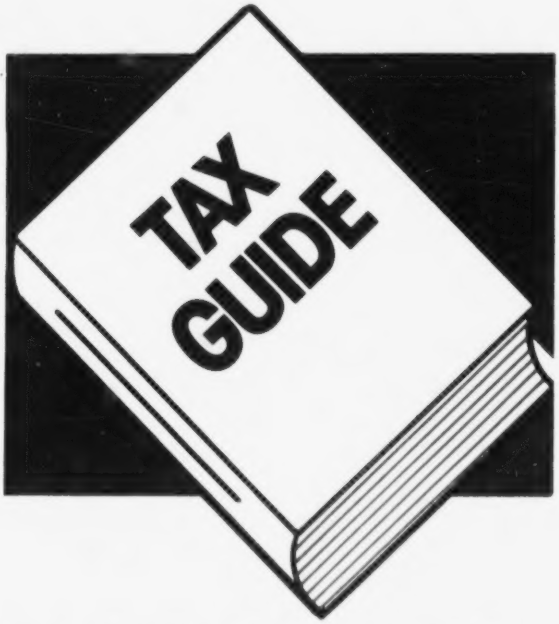


Fig. 25 — Taxes Must Be Considered As A Part Of The Analysis

First, because interest payments are tax-deductible, the cost of borrowing is reduced. Second, your income cash flow from an investment must be shared with the IRS. The amount depends on your individual tax bracket. The investment credit actually reduces the initial cost of an investment by the amount of the income tax credit.

INVESTMENT TAX CREDITS

Investment tax credits make money for the Don Smith Cattle Company (Fig. 26). Don Smith subtracts his investment credit allowances from the present value of his costs to see how much investment tax credit that he will receive. Subtracting Investment Credit from the costs can make a seemingly unprofitable investment profitable.

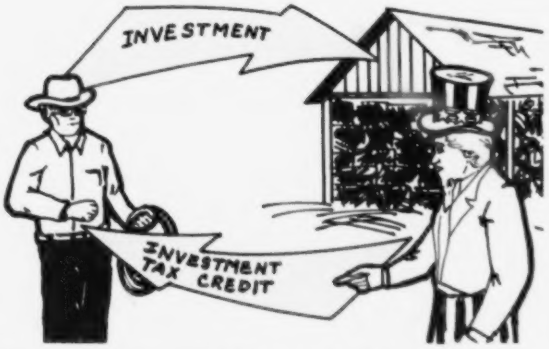


Fig. 26 — Investment Tax Credits Mean Money For Investors

Tax laws change. Currently the ACRS 3-year class property allows people to subtract up to 60 percent of the investment cost. Five and 10 year property allows higher percentages. Don Smith had to get the current tax law from the IRS so that he could see how much investment tax credit that he would get.

You must check the current tax laws in all investment analysis in order to find out if you can get credits on your present, past, and future taxes.

FEASIBILITY

Now that Don can analyze, he can look at some investments and decide which gives the best return.

There is another aspect that Don weighs before he actually invests money — Feasibility (Fig. 27). A feasible investment is one that has the proper balance of financing and cash flow. For an investment to be feasible, cash flow, after making all loan payments, must be positive. If it isn't, you have an investment problem. If you have the money to pay from savings or earnings, and don't have to borrow money, then you aren't faced with considering feasibility. You don't have a problem because you have zero loan payments.

Here is how Don Smith looks at feasibility. He can get 100 percent financing for Investment B. No cash up front. He will pay interest at 10 percent a year. The loan is for six years with equal payments each year.

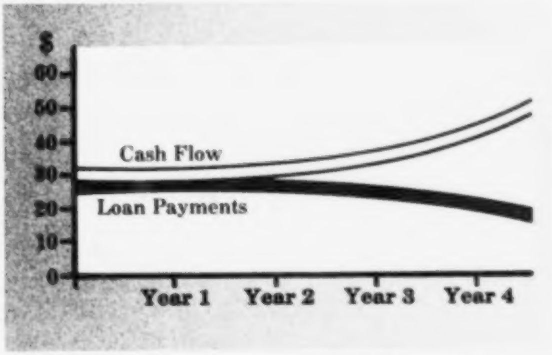


Fig. 27 — A Feasible Investment Has A Positive Cash Flow

Don uses an amortization table (Fig. 28) to look up the amount that he would pay. He finds the intersection of 10 percent and 6 years. The number, .2296, is printed at the intersection of 10 percent and six years. It is circled so that you can find it easily. Don multiplies .2296 by the loan amount $1,000

.2296 x 1000 = $229.60

and gets the **total** annual payments of $229.60.

Table 3

Annual Payment Per $1 of Loan at Given Interest Rates and Maturities (Amortization Table)

Year	4%	5%	6%	7%	8%	9%	10%	11%
1	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100
2	.5301	.5378	.5454	.5530	.5607	.5684	.5761	.5839
3	.3603	.3672	.3741	.3810	.3880	.3950	.4021	.4092
4	.2754	.2820	.2885	.2952	.3019	.3086	.3154	.3223
5	.2246	.2309	.2373	.2438	.2504	.2570	.2637	.2705
6	.1907	.1970	.2033	.2097	.2163	.2229	.2296	.2363
7	.1666	.1728	.1791	.1855	.1920	.1986	.2054	.2122
8	.1485	.1547	.1610	.1674	.1740	.1806	.1874	.1943
9	.1344	.1406	.1470	.1534	.1600	.1667	.1736	.1806
10	.1232	.1295	.1358	.1423	.1490	.1558	.1627	.1698
11	.1141	.1203	.1267	.1333	.1400	.1469	.1539	.1611
12	.1065	.1128	.1192	.1259	.1326	.1396	.1467	.1540
13	.1001	.1064	.1129	.1196	.1265	.1335	.1407	.1481
14	.0946	.1010	.1075	.1143	.1212	.1284	.1357	.1432
15	.0899	.0963	.1029	.1097	.1168	.1240	.1314	.1390
16	.0858	.0922	.0989	.1058	.1129	.1203	.1278	.1355
17	.0821	.0886	.0954	.1024	.1096	.1170	.1246	.1324
18	.0789	.0855	.0923	.0994	.1067	.1142	.1219	.1298
19	.0761	.0827	.0896	.0967	.1041	.1117	.1195	.1275
20	.0735	.0802	.0871	.0943	.1018	.1095	.1174	.1255
25	.0640	.0709	.0782	.0858	.0936	.1018	.1101	.1187
30	.0578	.0650	.0726	.0805	.0888	.0973	.1060	.1150
35	.0535	.0610	.0689	.0772	.0858	.0946	.1036	.1129
40	.0505	.0505	.0664	.0750	.0838	.0929	.1022	.1117

Table 3, cont'd

Year	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1.1200	1.1300	1.1400	1.1500	1.1600	1.1700	1.1800	1.1900	1.2000
2	.5916	.5994	.6072	.6151	.6229	.6308	.6387	.6466	.6545
3	.4163	.4235	.4307	.4379	.4452	.4525	.4599	.4673	.4747
4	.3292	.3361	.3432	.3502	.3573	.3645	.3717	.3789	.3862
5	.2774	.2843	.2912	.2983	.3054	.3125	.3197	.3270	.3343
6	.2432	.2501	.2571	.2642	.2713	.2786	.2859	.2932	.3007
7	.2191	.2261	.2331	.2403	.2476	.2549	.2623	.2698	.2774
8	.2013	.2083	.2155	.2228	.2302	.2376	.2452	.2528	.2606
9	.1876	.1948	.2021	.2095	.2170	.2246	.2323	.2401	.2480
10	.1769	.1842	.1917	.1992	.2069	.2146	.2225	.2304	.2385
11	.1684	.1758	.1833	.1910	.1988	.2067	.2147	.2228	.2311
12	.1614	.1689	.1766	.1844	.1924	.2004	.2086	.2168	.2252
13	.1556	.1633	.1711	.1791	.1871	.1953	.2036	.2121	.2206
14	.1508	.1586	.1666	.1746	.1828	.1912	.1996	.2082	.2168
15	.1468	.1547	.1628	.1710	.1793	.1878	.1964	.2050	.2138
16	.1433	.1514	.1596	.1679	.1764	.1850	.1937	.2025	.2114
17	.1404	.1486	.1569	.1653	.1739	.1826	.1914	.2004	.2094
18	.1379	.1462	.1546	.1631	.1718	.1807	.1896	.1986	.2078
19	.1357	.1441	.1526	.1613	.1701	.1790	.1881	.1972	.2064
20	.1338	.1423	.1509	.1597	.1686	.1776	.1862	.1960	.2053
25	.1275	.1364	.1454	.1546	.1640	.1734	.1829	.1924	.2021
30	.1241	.1334	.1428	.1523	.1618	.1715	.1812	.1910	.2008
35	.1223	.1318	.1414	.1511	.1608	.1707	.1805	.1904	.2003
40	.1213	.1309	.1407	.1505	.1604	.1703	.1802	.1901	.2001

Fig. 28 — Amortization Table

Year	Flow	Amortized payment	Interest	Principal	Unpaid principal balance	Depreciation	Interest plus depreciation	Taxable income [after interest & depreciation] [col 2-col 8]	Change in taxes [20% x col 9]	Cash flow after taxes taxes [col 2-col 10]	Cash flow after tax & payment [col 11-col 3]
$	$	$	$	$	$	$	$	$	$	$	$
1	100	229.60	100.00	129.60	870.40	150	250.00	−150	−30.00	130.00	
2	200	229.60	87.04	142.56	727.84	220	307.04	−107.04	−21.41	221.41	
3	300	229.60	72.78	156.82	571.02	210	282.78	17.22	3.44	296.56	66.96
4	400	229.60	57.10	172.50	398.52	210	267.10	132.90	26.58	373.42	143.82
5	500	229.60	39.85	189.75	208.77	210	249.85	250.15	50.03	449.97	220.37
6	600	229.60	20.88	208.72	—		20.88	579.12	115.82	484.18	254.58

Investment tax credit is not considered. If considered at the reduced rate (8%) the negative cash flow the first year would be reduced to a — 1960

Fig. 29 — Cash Flow After Taxes, Principal, And Interest

Figure 29 shows the cash flow after payment of tax, principal, and interest. Look at the last column. You can see positive cash flow of income for all years **except** the first two:

-99.60 and -8.19

The negative cash flow in the first two years must be balanced by another source. Don will have to pay it out of his profit. Don could borrow a little more money or take money out of savings. The point is that money is required to make loan payments which exceed investment earnings. These two years of negative cash flow will have to be made up before the investment is really feasible.

Cash flow problems usually **do not** arise when investments are profitable. Cash flow problems happen when the term of a loan is shorter than the economic life of an investment. Imagine the cash flow problems in the investment in Fig. 29 if it had a 3-year term instead of a 6-year term. The negative cash flows would not be limited to the first two years. There would be a negative flow every year.

SUMMARY

Before making the decision to invest, check the finance arrangement. Is the loan length right? Is it close to the economic life? If not there could be a negative money flow that makes the loan unfeasible.

RISK AND UNCERTAINTY

Don Smith doesn't like to make management decisions when the outcome is uncertain (Fig. 30). Uncertainty leads to error and surpises. Don turns uncertainty into **risk.** Risks are more manageable, because a percentage of probability can be put on them. For example, you watch the television weather forecast during planting season to get the **chance** or risk of rain. A weatherperson may predict a 60% chance. This may affect your decisions for the next day. With uncertainty, you are not aware that rain is possible.

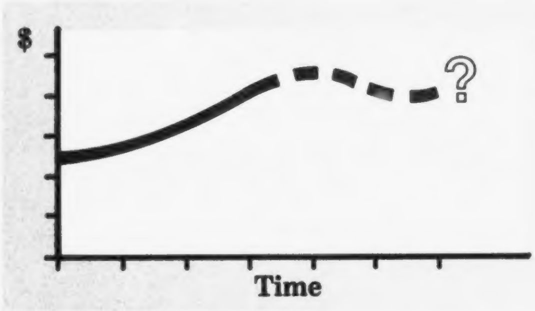


Fig. 30 — Without Risk There Would Not Be Profit

Fig. 31 — Increase The Discount Rate to Allow For Risk

DISCOUNT ADJUSTMENT

The first way that Don Smith adjusts for risk is to use a higher discount rate. That reduces the cost/benefit in an analysis (Fig. 31). As the discount rate used in an investment analysis goes up, the benefit/cost ratio goes down (Fig. 32). Increasing the discount factor in his analysis automatically produces a lower ratio of cost to benefit, and a lower expected income. The more risk that an investment has, the larger the discount rate that he uses. If he needs to earn 10% on a risky investment, he discounts at 12 percent. The 2 percent difference is a safety factor. If the risk is greater, he adds 4 percent to the discount rate when he does his cost/benefit analysis. How can he really know how to tell the difference between a 2 percent risk and a 4 percent risk? There is too much guess work to use discount adjustment alone. Here is what Don does.

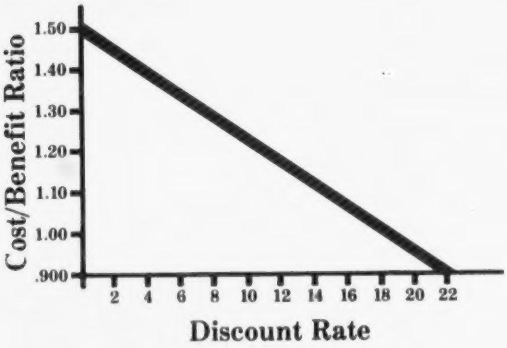


Fig. 32 — As The Discount Rate Increases, The Cost/Benefit Goes Down

LOOK AT A NUMBER OF POSSIBLE OUTCOMES

Don is considering an investment that could return $300 per year. The investment costs $1,000 and has a life of 5 years. Don is fully aware that his estimated return will vary from the $300 annual return. In addition to changing the discount rate, what else can Don do to allow for expected variation? A common approach to handling this risk is to look at some other likely outcomes.

Don calculates that he can expect go get $250 per year with the worst possibility. On the other hand, Don thinks: "If things go well, I could make $350 per year. Then there is the inbetween case where I would make $300." So Don has **3 possible** outcomes that could happen (Fig. 33):

- The best
- The most probable
- The worst

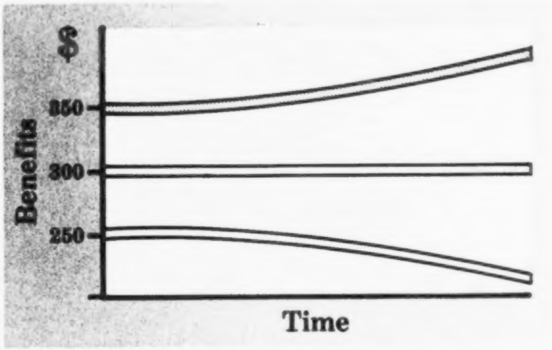


Fig. 33 — Don's Risk Has Three Possible Outcomes

If Don finds that all three cases are profitable, then he will go ahead with the investment. The worst is still profitable.

If only the best case is profitable, then he will not make the investment. With a 2 out of 3 chance of loss, the investment is too risky.

If the analysis shows that both the best case and the probable case are profitable, then Don must ask himself if he is financially able to take the risk of having a bad outcome.

Now, let's look at Don's computations (Fig. 34). The two highest estimates, most likely and probable, prove to be profitable. The benefit/cost (B/C) ratio is greater than one. But the worst case is not profitable. It has a B/C ratio less than 1.

Should Don make the investment?

Don should go ahead if he can withstand the worst outcome consequence of the $250 return. Don should realize that the worst case has a B/C ratio of .947 this is close to one, the break-even value.

<table>
<tr><th colspan="4">Costs are $1,000 and the rate of return needed is 10%</th></tr>
<tr><th>Year</th><th>Worst Case Between</th><th>Most Probable Case</th><th>Best Case</th></tr>
<tr><td>1</td><td>250</td><td>300</td><td>350</td></tr>
<tr><td>2</td><td>250</td><td>300</td><td>350</td></tr>
<tr><td>3</td><td>250</td><td>300</td><td>350</td></tr>
<tr><td>4</td><td>250</td><td>300</td><td>350</td></tr>
<tr><td>5</td><td>250</td><td>300</td><td>350</td></tr>
<tr><td>Present Value</td><td>$947.50</td><td>$1,137</td><td>$1,326.50</td></tr>
<tr><td>Benefit/Cost (B/C)</td><td>.947</td><td>1.137</td><td>1.326</td></tr>
</table>

Fig. 34 — Don Computes His Three Possible Risks

ODDS ON ALTERNATIVE OUTCOMES

Don calculates the odds of each of these three outcomes. Don calculates the probabilities as follows:

- The $300 estimate should happen 3 out of the 5 years.
- The $250 - 1 out of the 5.
- The $350 - 1 year out of 5 years.

The odds are shown as a portion of the total 5 years (Fig. 35). The $350 return is expected 1 year out of 5, which is 1/5, or 20 percent, or .20. Don calculated it by dividing 1 by 5.

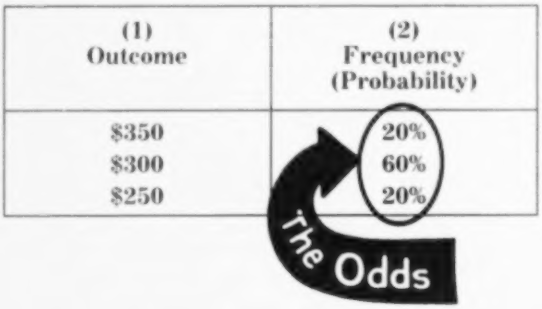
100 ÷ 5 = 20%

The $300 return will occur 60 percent of the time. This is found by dividing 3 by 5.

The $250 return has the same probability as the best case (20 percent).

Don makes a chart with the figures (Fig. 35). He sees that the best outcome is the $300 return with a 60 percent probability of happening. Now that he knows which outcome is most probable, he uses the results in the rest of his investment analysis.

If Don multiplies the probability in column 2 (Fig. 35) times the money return in column 1, then he gets the money consequences for each outcome. That helps him further his analysis.



(1) Outcome	(2) Frequency (Probability)
$350	20%
$300	60%
$250	20%

Fig. 35 — The Frequency Probability Estimates The Chance For Success In An Investment

SUMMARY

Analyze investment opportunities by comparing investment characteristics to one another directly. Use the Index of Profitability to weigh each characteristic.

A good analysis must take into account the Time Value of Money. You must compound or discount the earnings that you expect from an investment. You must look at the investment in proper perspective. Compounding, discounting, annuity tables, and some arithmetic help you make accurate partial investment analysis.

Full investment analysis can be done by using two ways:

- Payback analysis
- Present Worth analysis

Taxes affect investment analysis with investment tax credits. You must allow for them.

Investment analysis can be tested for accuracy two ways:

- Feasibility
- Risk evaluation
  - Several outcomes
  - The odds of outcomes

With this knowledge you have a good chance of making the correct decision.

HOW TO GAIN CONTROL OF AN INVESTMENT

After you choose an investment, you must be able to acquire it. Which way is best to get control of the investment? You may buy it with cash, borrow cash to buy it, or you may lease it. This portion of investment analysis will give you practice in evaluating financing options and discounting money flows.

In his cattle operation, Don Smith always has his feed processed by a mill. He provides most of his feed by growing his own grain. He hauls it to a mill for processing. A completely balanced ration is then delivered to Don on request.

A feed mill right on the Don Smith Cattle Company reduces the cash outflow and results in higher income. There are three ways that Don could gain control of a processing mill (Fig. 36):

- A cash purchase
- Borrow the money to purchase
- A financial lease

A cash purchase can be made for $45,000. The borrow/purchase alternative requires a $4,500 down payment with the remaining balance ($40,500) financed with an amortized loan over a five-year term at 14 percent interest. A financial lease alternative requires five annual lease payments of $10,000. Don must make the first lease payment immediately. He has the option to purchase the mill for $4,500 at the end of the lease period. Which is best? He must analyze each alternative and compare before he chooses.

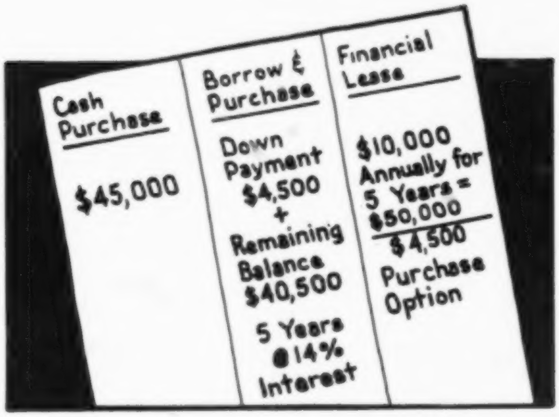


Fig. 36 — Each Type Of An Investment Has Hidden Problems And Pluses

WHAT IS A FINANCIAL LEASE?

A financial lease is a long-term contract. The lessee (Don) gains sole use of the equipment (mill) in return for lease payments. Don will pay for the cost of maintenance, insurance, and taxes on the equipment. This is usually the case with all leases. The lessor still owns the equipment. Don finds leasing companies, equipment companies, and some banks that provide leasing services. Don's banker tells Don to negotiate a purchase price **before** he tells the mill salesman that he would consider leasing. Dealers will set a lease payment estimate based on the **list price** of the item unless you first successfully negotiate the price.

This lease gives the option of purchasing the mill at the end of the lease period for $4,500, or 10% of the cash price. That is a popular lease option.

TAX SHIELDS

Don wants to get control of the mill as inexpensively as possible. The best method for Don depends on Don's tax bracket and his discount rate. Let's look at the tax aspects of each of the three methods that Don wants to consider.

CASH PURCHASE

If Don buys outright with money on hand, then he will have two tax shields (Fig. 37):

1) depreciation
2) investment tax credit

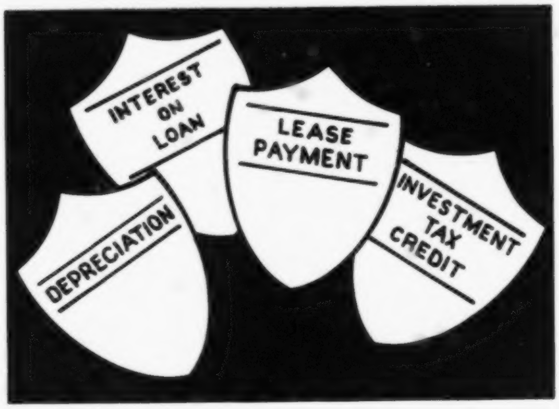


Fig. 37 — Tax Shields Change The Profitability Of An Investment

A tax shield is an amount of money that you can deduct as a business expense from your taxable income. This income is protected from being taxed.

Purchase with borrowed money.

Now there are three tax shields:

1) interest on his loan
2) depreciation
3) investment tax credit

Financial lease

1) Don's tax shield is his total lease payment.

2) Don cannot take depreciation.

3) Don could, if he wanted to, take an investment tax credit. Unless Don is in a high tax bracket, it is beneficial to let the lessor take the investment tax credit.

The financial lease may be the best method to get control of an investment. It depends on the tax situation of the lessee (Don) and the lessor. When the lessor can get a good tax break on a purchase, he can in turn give the lessee (Don) a better deal.

Before entering into a lease agreement, check with a qualified accountant or attorney to make certain your lease is a "true lease." If it isn't, the Internal Revenue Service (IRS) may not let you deduct the lease payments as an expense. What appears to be a good deal could turn out to be a poor one.

Look at how Don analyzes the situation. The goal of Don's calculation is to get a figure for the cash flow after taxes. Don discounts the cash flow after taxes for each method of financing the mill, and compares the numbers.

HOW TO SELECT THE BEST METHOD

The correct way to select the lowest cost method of financing the mill is for Don to compare dollar outflow. He must first adjust for the time value of money.

Lease Alternative For Don's Mill

(1) Year	(2) Lease Pay	(3) Tax Shield (Col 2 x .30)	(4) After Tax Cash Flow (Col 2 - Col 3)	(5) Present Value Factors (10%)	(14%)	(6) Present Value of Cash Flow (10%)	(7) Present Value of Cash Flow (Net Lease Payments) (14%)
0	10,000	0	10,000	1.0	1.0	10,000	10,000
1	10,000	3,000	7,000	.909	.877	6,363	6,139
2	10,000	3,000	7,000	.826	.769	5,782	5,383
3	10,000	3,000	7,000	.751	.675	5,257	4,725
4	10,000	3,000	7,000	.683	.592	4,781	4,044
5	4,500	3,000	1,500	.621	.519	932	778
					Sum of Present Values =	$33,115	$31,169

Fig. 38 — Lease Payments Are Considered An Expense At Income Tax Time

THE LEASE

All lease payments are considered an expense for tax purposes. Because Don is in the 30% tax bracket, 30 percent of the $10,000 lease payment is tax savings. Another way of looking at the tax matter is that Don pays $3,000 more taxes if he can't deduct the lease payment as an expense. The $10,000 lease payment is reduced by $3,000 each year to yield a $7,000 after-tax cash outlay (Column 4 in Figure 38).

Don looks at the impact of two different discount rates; they are 10% and 14%. Don has money in savings that pays 10% and the 14%. This is the rate that he must pay to borrow money from the bank. Don wants to find the present value of the lease payments. This will let him compare the borrow/purchase and cash purchase options.

Don discounts the after-tax cash flow of the two different discount rates. He totals them and finds that the total present value of the lease payments is:

- $33,115 at 10%
- $31,169 at 14%

THE BORROW/PURCHASE

Figure 39 shows the borrow/purchase option. Don's lender wants him to make a down payment of $4,500.

Don must make the calculations. Refer to the tax shield factors that are presented earlier. Interest, depreciation, and the Investment Tax Credit (ITC) must be considered to get an after-tax cash flow estimate. With an after-tax cash flow estimate, Don discounts the after-tax dollar outlay to get a present value of the cash flows.

Because Don makes a $4,500 down payment, $40,500 is the amount that he must borrow at 14 percent interest. Don wants equal total payments for his loan (amortized loan).

Purchase Option With Borrowed Money for Don's Mill

(1) Year	(2) Interest	(3) D.P. or Prin.	(4) Total Payment (Col 2 + Col 3)	(5) Remaining Balance	(6) Depr. ACRS	(7) Total Tax Shield (Col 2 + Col 6)	(8) Reduce Tax (Col 7 × .30)	(9) Reduce Tax + I.C.	(10) After tax cash flow (Col 4 - Col 9)	(11) Present Value of Cash Flow (10%)	(12) (14%)
0	—	4500	4500	40500	—	—	—	—	4500	4500	4500
1	5670	6128	11798	34372	.15 (45000) = 6750	12,420	3726 + 3600*	7326	4472	4065	3922
2	4812	6986	11798	27386	.22 (45000) = 9900	14,712	4414	4414	7384	6099	5678
3	3834	7964	11798	19422	.21 (45000) = 9450	13,284	3985	3985	7813	5274	5274
4	2719	9079	11798	10343	.21 (45000) = 9450	12,169	3651	3651	8147	5564	4823
5	1448	10343	11798	0	.21 (45000) = 9450	10,898	3269	3269	8529	5297	4427
									Sum of All Present Values =	$30,799	$28,624

*Reduced I.T.C. assumed; hence tax basis not changed. I.T.C. is at 8% rate. If 10% I.T.C., then basis must be reduced by 50% of I.T.C.

Fig. 39 — Purchases With Borrowed Money Require Down Payments

Column 2 of Figure 39 shows interest each year for the $40,500 loan. Column 6 shows the depreciation by the ACRS method. Don added the interest and depreciation to get the total tax shield, which is in Column 7. The tax shield times Don's marginal tax rate gives the reduced taxes that Don would have to pay the IRS if he borrows $40,500 to purchase the mill. In year one, Don also takes the $3,600 Investment Tax Credit (ITC) ($45,000 x 8 percent).

These reduced taxes are then subtracted from the total loan repayment of $11,798 to get the after-tax cash outflow that Don must make for five years.

Don then discounts. The results are shown in Columns 11 and 12. What did Don find? Don saves money when he borrows the capital and purchases the mill. At a 10 percent discount rate he saves $2,316 by borrowing and purchasing the mill over leasing. This is found by subtracting $33,115 - $30,799. If Don's opportunity cost of capital is 14%, then he saves $2,545 ($31,169 - $28,624).

THE CASH PURCHASE

But what about the cash purchase option? By paying cash, the only tax shield is the ITC and the depreciation. Look at Figure 40 for Don's figures on this method.

The present value of the cash outlay for the cash purchase is the $45,000 initial outlay minus the present value (PV) of tax benefits. This gives a net outlay of $31,609 at a 10% discount rate. Don sees this method correctly as the most costly to him at higher discount rates.

Comparing The Dollar Outflow of Different Ways To Get The Mill With Different Interest or Discount Rates

Ways of Control	Present Value of Dollar Outflow	
	Discount Rates	
	10%	14%
Borrow/Purchase	$30,799	$28,624
Cash Purchase	$31,609	$32,719
Lease	$33,115	$31,169

Fig. 41 — Don Summarizes His Possibilities, And Makes His Decision

Look at Figure 41, which summarizes all that Don has found out from his computations. He plans to take these calculations to his lender.

Don can make the correct decision of going to his lender and borrowing the money to purchase the feed mill. With these calculations, he finds that it is easier to obtain his loan.

SUMMARY

Managers must analyze the impacts of an investment on the business and also evaluate external impacts on that investment. In the feed mill example, it is evident that the discount rate (or expected discount rate) as well as tax consequences of investment, tax credit, and tax depreciation, have a significant impact on Don Smith's decision. Analysis of investment decisions can be used to help managers make more effective use of the capital invested in their business.

A Cash Purchase Option For Don's Mill

(1) Year	(2) Payment	(3) Depreciation	(4) Tax Reduction (Col 3 x .30)	(5) Present Value of Tax Savings (10% discount rate)	(6) Present Value of Tax Savings (14% discount rate)
0	45,000	—	—	—	—
1		6750	2025	5113	4934
2		9900	2970	2453	2284
3		9450	2835	2129	1914
4		9450	2835	1936	1678
5		9450	2835	1760	1471
			Present Value (PV) of Tax Savings =	**$13,391**	**$12,281**

Net cash outlay (with 10% discount rate) = $45,000 - 13,391 = $31,609

Net cash outlay (with 14% discount rate) = $45,000 - 12,281 = $32,719

Fig. 40 — Cash Purchases Require Careful Analysis

TAXES

CHAPTER 9

INCOME TAXES

Citizens of the United States who earn an income must file a Federal Income Tax Return. A return also is required by some states, and local governments. The farm or ranch manager must consider tax and tax options when cash flows, investments, and budgets are analyzed (Fig. 1).

Fig. 1 — The Farm Or Ranch Manager Must Closely Examine Taxes

WHO IS A FARMER OR RANCHER?

Agriculture includes many highly specialized areas. No matter what the enterprises are, however, the business of agriculture requires a large investment with comparatively low returns (Fig. 2). In response to this, the tax laws for agriculture also are specialized.

Fig. 2 — Farming And Ranching Requires A Large Investment And Produces A Relatively Low Return. (It Takes Many Ingredients To Make One Apple Pie.)

Three general examples of these laws include:

- Farmers and ranchers can use special accounting methods despite high year-end inventories.
- There are special capital expenditure deductions.
- The treatment of livestock as a capital asset is unique. For example, you can raise a brood cow from calf and treat it as a manufacturing plant. You can write this product off to current operating expenses just like a manufacturing company can write-off the machines and buildings that it uses to make a product.

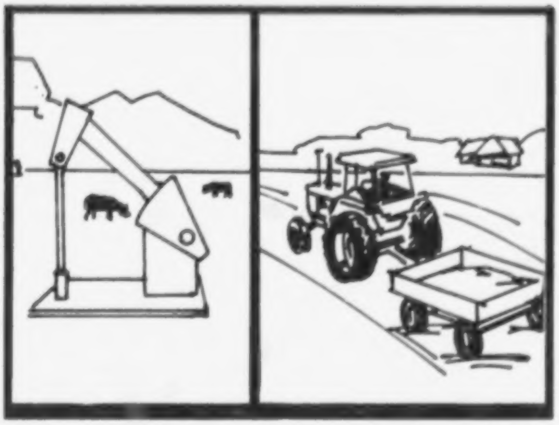


Fig. 3 — A Farmer Or Rancher Operates An Agricultural Business For Gain And Profit

To take advantage of these laws, you must be a farmer or rancher. You must cultivate, operate, or manage a farm or ranch for gain or profit (Fig. 3). Farmers and ranchers produce the traditional products such as:

- Dairy produce
- Poultry
- Fruit
- Vegetables
- Beef

Products may also be innovative such as:

- Catfish, trout, frogs, and crawfish
- Sod
- Mushrooms

Farming and ranching does not include timber and forestry work. It also does not include people who receive a fixed rent in cash or produce from a farm operation. The "farmer" and "rancher" must materially participate in the risks involved with the operation of a farm or ranch (Fig. 4).

It is not necessary for farmers and ranchers to live on the ground that they work in order to qualify for the agriculture tax laws. These laws also apply to large corporations that own vineyards, orchards, ranches, and land that is used for farming operations. People who have formed partnerships and part-time farmers and ranchers also can use the agriculture tax laws.

Fig. 4 — A Farmer Or Rancher Takes Risks In Order To Gain Profit

INCOME TAX MANAGEMENT

Income tax management is the attempt to maximize after tax income. Good tax management puts the squeeze on the flow of tax dollars. Income tax management also includes the filling out and filing of the correct tax forms.

These forms vary from state to state and from one local government to another. The necessary forms may also change from year to year.

CHOOSE THE BEST ACCOUNTING METHOD

In order to manage taxes it is necessary to adopt an accounting method that best suits your situation. In Chapter 2, we find that there are two types that are used by farm and ranch managers:

- Cash
- Accrual

The cash method is used because fewer records need to be kept. The main idea of this method is that entries must be made for every purchase and every sale. Inventory plays no major role in this system. You are taxed only on the profit when the cost is subtracted from the selling price.

The cash method also allows you to continually invest in your business and not be taxed until the property is sold. Other benefits include (Fig. 5):

- Raised dairy or breeding livestock taxed when sold. This means less tax. These animals are not carried on inventory until they are sold. In effect the cash method converts more ordinary income to capital gain. Livestock is a capital asset.

- The estate transfer of a farmer who uses the cash basis. When death occurs, the livestock, and other commodities pass to the estate with a tax basis based on the current market value.

Fig. 5 — The Cash Method Of Accounting Is Used In Specific Tax Situations

The accrual method is used because (Fig. 6):

- It allows you to keep track of your entire business through inventory in comparison with output.

- It levels out the peaks and valleys of income without year-end manipulations. For example, a crop farmer who holds crops into the next year will automatically avoid the problem of reporting income from two crops in one year.

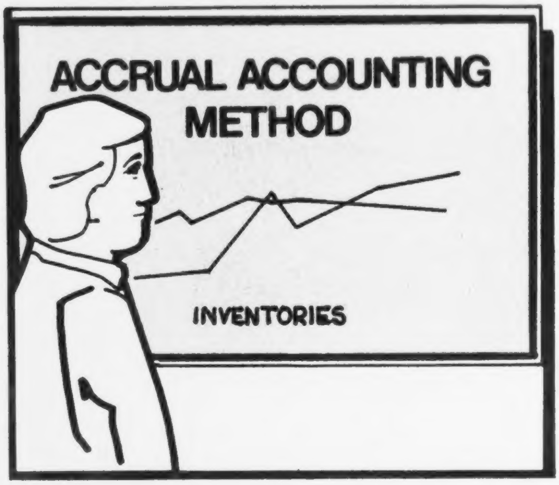


Fig. 6 — The Accrual Method Of Accounting Helps You Level Out Peaks And Valleys When You Pay Income Taxes

THINK TAXES

The farm or ranch manager must think about taxes every day. However, it is a good practice to completely reevaluate the business tax situation two or three months before the end of the tax year.

For example, every October the Snyder family evaluates their tax strategy (Fig. 7). They know that they must make sure that their records are complete before they take them to their tax accountant in January. Like most farm families they are using the cash method of accounting.

Fig. 7 — Every October The Snyders Evaluate Their Tax Records

SNYDER'S DAIRY — October

Roy Snyder and his wife, Mary, own and operate a 40 acre crop and dairy farm near a small midwest community. Roy and Mary work hard to minimize their tax obligations and maximize their profits. They know that they must pay only the taxes that they are obligated to pay.

In order to reduce any unexpected loss from their farming operation, and to maximize their returns after taxes, the Snyders complete a tax estimate form in October.

Five years ago when Mary and Roy decided to buy their farm, they outlined their tax management goals. They wanted to:

- Keep taxes as low as possible. Pay only the taxes that they are required by law to pay (Fig. 8).
- Make use of all exemptions.
- Keep the tax load balanced if possible.
- Work with their taxes day to day to eliminate the need to do them the week before they file their return.
- Make taxes an integral part of their management decisions.

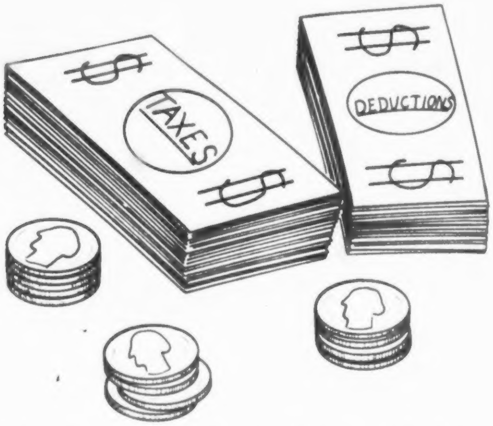


Fig. 8 — Roy And Mary Restrict Their Taxes To Only Taxes They Are Obligated To Pay

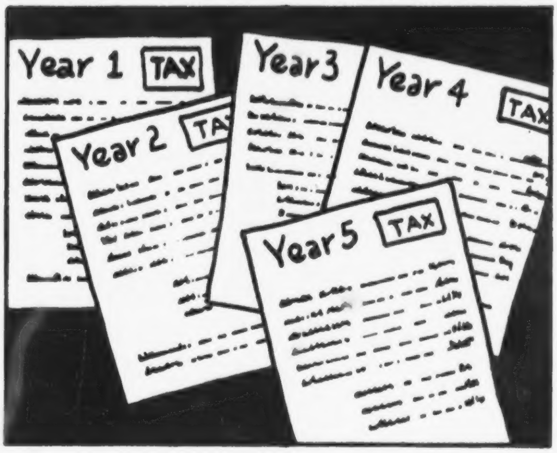


Fig. 9 — The Snyders Begin Their Evaluation By Looking At Past Income Tax Returns

THE TAX WORKSHEET

The Snyders begin their tax review by looking at their tax returns for the past five years (Fig. 9). They compare this actual data with their current tax worksheet. This allows them to estimate what will happen for the remainder of the year. They can use this information to determine if they are moving into another tax bracket. Roy and Mary review the list of items on their worksheet. They add or remove items as necessary. Their items include:

- Ordinary farm receipts
- Receipts from the sale of items that are purchased for resale
- Purchase cost of resale items sold
- Capital sales that qualify for capital gains treatment
- Capital sales that do not qualify for capital gains treatment
- Nonfarm income
- Farm expenses
- Depreciation records
- Capital purchases

- Nonfarm business deductions
- Itemized deductions
- Personal exemptions
- Investment tax credit information
- Federal gas tax credit information
- Social Security information (hired labor and self-employment)
- Records of self-employment retirement programs
- Information for filing returns
- Current year's federal and state income tax tables

COLLECTING DATA

The Snyders know that income tax laws change from year to year. They know that new laws may require changes in their record keeping and accounting practices. They send for their local and state tax guides and sample tax forms. They also send for these current Federal government publications (Fig. 10):

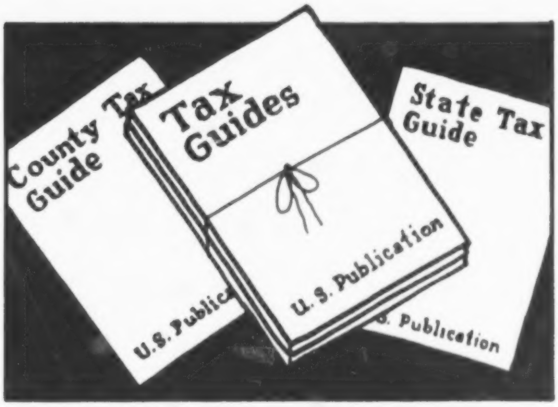


Fig. 10 — Roy And Mary Obtain Up-To-Date Tax Laws And Forms

- Publication 225, *Farmer's Tax Guide*
- Publication 17, *Your Federal Income Tax for Individuals*
- Publication 334, *Tax Guide for Small Business (partnerships and corporations)*

Mary also points out that Roy needs the most recent information available on their state income tax.

UNDERSTANDING INDUSTRY TERMS

Tax guides and tax returns for specific industries use specialized words. Agriculture is no different. From the potato fields of Idaho with their hundred weights of "bakers" and "slicers" to the berry fields of Oregon, with their "flats," the field of agriculture is filled with special terms.

Roy and Mary know that they must have the correct definition of these terms in order to complete their taxes correctly. Subtle differences in terminology affect the tax values of products (Fig. 11).

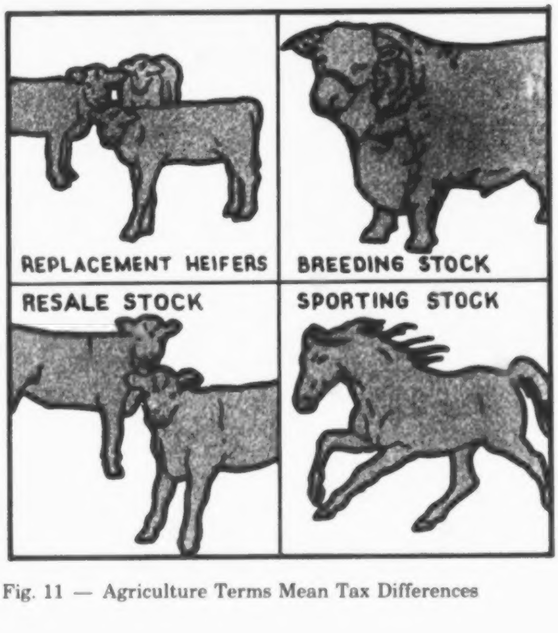


Fig. 11 — Agriculture Terms Mean Tax Differences

			HELD FOR DRAFT, BREEDING, DAIRY, OR SPORTING PURPOSES		
TYPE OF ANIMAL	PURPOSE	HELD FOR RESALE	Held for less than required period [24 months for cattle; 12 months for others]	Held for required period [24 months for cattle; 12 months for others]	
				Raised	Purchased
I. Calves, weaners, and lambs	Young animals held for resale. Usually sold before reaching one year of age	Ordinary income, Sch. F			
II. Steers, barrows, and wethers	Castrated males sold at ages 5 months to 3 years depending upon operator's practice	Ordinary income, Sch. F			
III. Replacement heifers	Female animals bearing their first offspring		Ordinary income Part II, Form 4797	Long-term capital gain Part I, Form 4797	Long-term capital gain Part III, Form 4797
IV. Cows, sows, and ewes	Female animals after bearing first offspring		Ordinary income Part II, Form 4797	Long-term capital gain Part I, Form 4797	Long-term capital gain Part III, Form 4797
V. Bulls, boars, and rams	Male animals held for breeding purposes		Ordinary income Part II, Form 4797	Long-term capital gain Part I, Form 4797	Long-term capital gain Part III, Form 4797
VI. Horses	Held for draft, breeding or sporting purposes		Ordinary income Part II, Form 4797	Long-term capital gain Part I, Form 4797	Long-term capital gain Part III, Form 4797

An example of this is the difference in the words that are used to determine the value of farm animals. The definition of the term is determined by the use of the animal. You must be aware of the differences in the meaning for the products and assets that you use in your particular enterprises.

CAPITAL GAINS

The amount of capital gain or loss from the sale of a capital asset is the difference between the selling price and the adjusted basis (Fig. 12). A sale or exchange of a capital asset will usually result in either a short-term or long-term gain or loss, depending on the length of time that the property is held. Under the Revenue Act of 1978, Roy, as a noncorporate taxpayer, may exclude from gross income 60% of the amount of any long-term capital gain for the taxable year. The remaining 40% of the net capital gain is included in gross income and subject to tax.

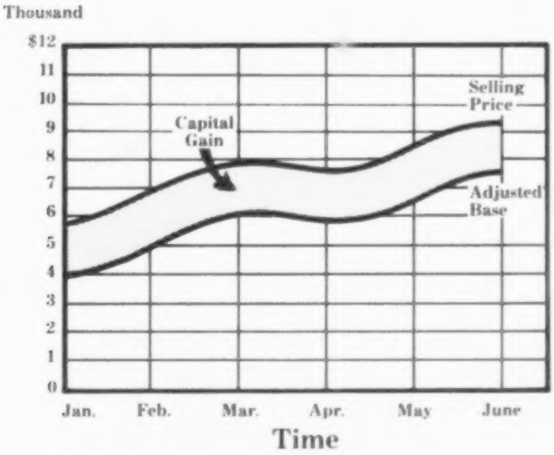


Fig. 12 — Capital Gain Or Loss Is The Difference Between The Selling Price And The Adjusted Base

During the previous year, Roy sold five raised dairy cows for $3,060. Roy was able to exclude $1836 (60% x $3060) from gross income. This meant that only $1224 ($3060 - $1836) was included in gross income from the sale and was subject to income tax.

Capital gains and losses are calculated on FORMS 4797 and Schedule D of the IRS 1040 Forms. To be eligible for capital gains, capital assets must be held for 12 months, except for some livestock.

ITEMS ELIGIBLE FOR CAPITAL GAINS TAX TREATMENT

Items eligible for capital gains tax treatment include:

- Depreciable property that is used in the business.
  Examples include machinery, equipment, and farm buildings.
- Livestock that is held for draft, breeding, dairy or sporting purposes.
- Unharvested crops on land that is used in farming, if the crop and land are sold, exchanged or involuntarily converted.
- Land that is used in farming.

DETERMINING GAIN OR LOSS

To determine the gain or loss on the sale of property, the farmer or rancher must know the original basis and additions or subtractions that must be made for the time the property is held (Fig. 13). Additions or subtractions are known as adjustments to the original basis. Allowable deductions for depreciation will reduce the basis. The costs associated with the loss are also deductible.

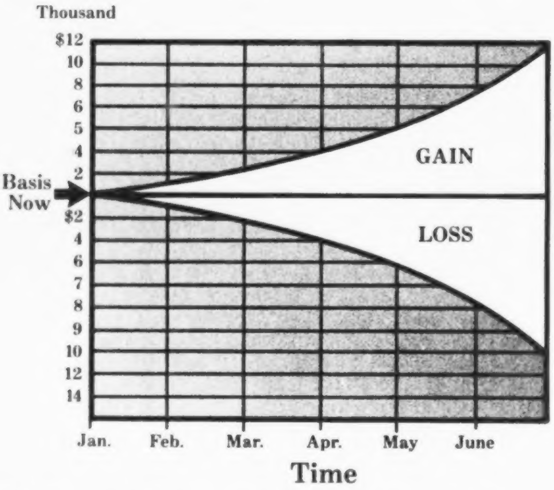


Fig. 13 — To Determine Gain Or Loss Of Property, You Must Know The Original Base

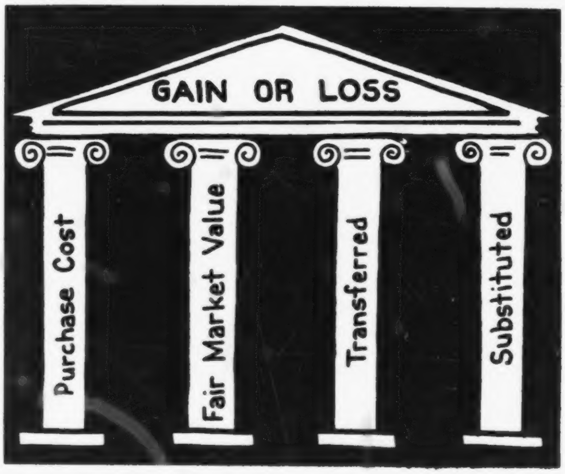


Fig. 14 — There Are Four Types Of Basis For Determining Gain Or Loss

There are four types of original basis (Fig. 14):

- Purchase cost
- Fair market value
- Transferred
- Substituted

Before capital gains may be computed, the basis must be determined.

During the current year Roy sold two purchased dairy cows, a mower, and a small tractor. He used the following form to calculate their capital gain or loss.

Description:	Tractor	Mower	Dairy Cow #41	Dairy Cow #52
A. Gross sales price minus expense of sale	$1700	$ 170	$502	$385
B. Cost or other basis	$5390	$1200	$400	$500
C. Depreciation allowed	$5117	$1200	$275	$170
D. Adjusted basis (B − C)	$ 273	$ 0	$125	$330
E. Total gain (A − D)	$1427	$ 170	$377	$ 55
F. Depreciation allowed	$5117	$1200	$275	$170
G. Enter smaller of line E or line F	$1427	$ 170	$275	$ 55
H. Total gains all properties (Total of line E)				$2029
I. Ordinary gain or loss (Total of line G)				$1927
J. Long-term gains or losses (H − I)				$ 102

Roy and Mary will add $1967.80 ($1927 + $40.80 (60% of $102)) to their gross income for this year.

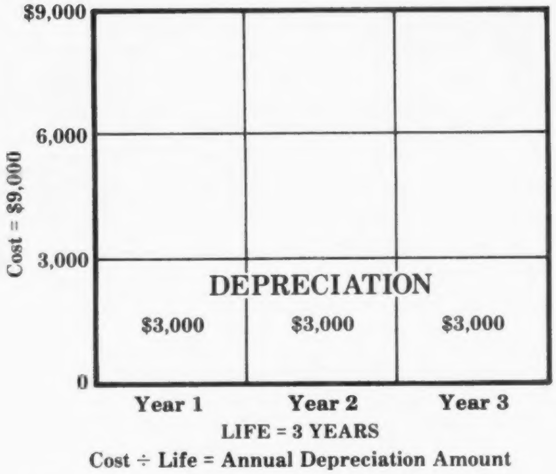


Fig. 15 — The Cost Of The Asset Is Equally Subtracted Over The Expected Life Of The Machine

DEPRECIATION

Income tax law states that assets such as machinery, livestock, orchards, equipment, and farm buildings with a useful life of more than one year may not be deducted as an expense in the year of purchase. Instead, part of the cost of the asset is deducted each year over the expected useful life of the asset (Fig. 15) until the value is zero (Fig. 16).

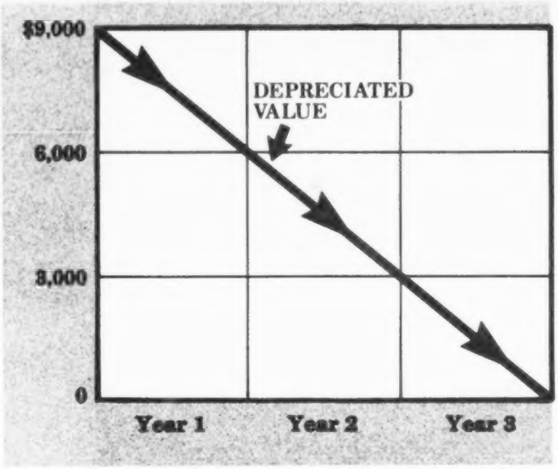


Fig. 16 — Assets Are Depreciated Until Their "Value" Is Zero

From a management viewpoint it is not advantageous to write off the entire cost of a new tractor or newly constructed farm building in the year that they are acquired. These assets are durable and provide productive services over time. Since these assets can contribute to production over several years, their costs are written off over their useful life.

Depreciation is a procedure that spreads out the value of these assets over the period that they are used. By depreciating an asset, an allowance is made for the loss in the asset's value that is caused by:

- Wear and tear due to use
- Obsolescence due to new technology
- Deterioration due to the elements of nature

The proportion of the original cost to be depreciated in any one year is largely a matter of judgment and financial management. One aspect of financial management is the influence that depreciation will have on income taxes. Another is the desire to have the undepreciated value of an asset reflect the resale value of that asset. The depreciation allowance taken in any year reflects the actual decline in the value of the asset. Therefore, the net worth statement shows the true value of depreciable assets.

GUIDELINES FOR DETERMINING PROPERTY SUBJECT TO DEPRECIATION

Roy and Mary use the following guidelines to determine if their capital assets can be depreciated (Fig. 17).

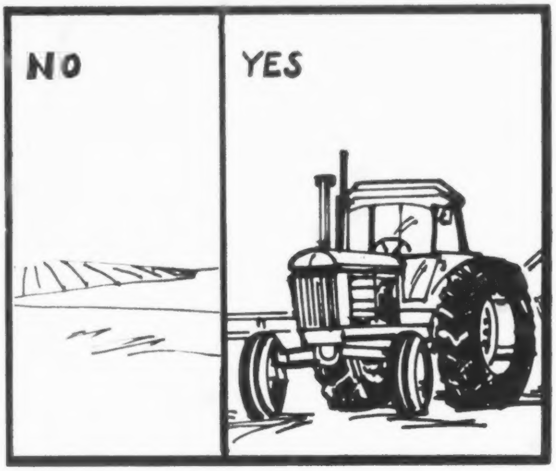


Fig. 17 — Only Assets With An Expected Useful Life Are Depreciated

- Reasonable deductions are allowed for the wear and tear of the machines that are used in a trade or business. It also applies to other property subject to wear that is used in the production process.

- Depreciable farm property includes all assets that are used in the business of farming that have a useful life of more than one year.

- Only assets which have a limited and determined useful life may be depreciated. Capital expenditures for assets which do not have a determined life, such as land or leasehold interests which are continuously renewed, are not deductible. Tax benefits of these assets are never realized until they are sold or lost.

FACTORS TO KNOW BEFORE FIGURING DEPRECIATION

Roy and Mary evaluate each asset before they figure depreciation. They must know three things about them (Fig. 18):

- What is their basis in the property? This includes the cash paid or the cash difference paid plus the depreciable balance of their trade-in.

- When is the property placed in service.

- Which method of depreciation is used.

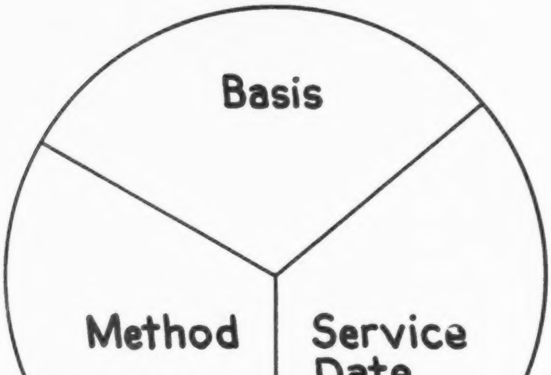


Fig. 18 — There Are Three Factors Of Depreciation

METHODS OF DEPRECIATION

Under the Economic Recovery Act of 1981, depreciation is referred to as recovery costs. Costs for most farm capital assets are recovered over a 3-year, 5-year, or 15-year period. Cost recovery methods are referred to as an Accelerated Cost Recovery System (ACRS). The two methods of cost recovery allowed under ACRS are:

- Regular ACRS

- Straight-line ACRS (this is sometimes referred to as the optional or alternative method)

CLASSES OF RECOVERY PROPERTY

Most agricultural assets are put into one of three classes of recovery property.

CLASS	EXAMPLES
3-year property	Autos (farm share), pickups (under 13,000 GVW), tools, breeding swine, some race horses
5-year property	Most machinery and equipment, breeding livestock, single purpose agricultural structures, fences, heavy trucks
15-year property	Farm buildings and barns

Regular ACRS For Personal And Real Property

Cost recovery for personal property is determined by multiplying the statutory percentage for the class of property by the cost basis of the item. Cost recovery for real property is determined by multiplying the statutory percentage for the month that it was purchased in by the property cost basis.

In July Roy purchased a new tractor for $35,000 (Fig. 19). Tractors are personal property and are classified as 5-year recovery property. Roy used the following table to calculate the cost recovery for each year of the tractor's useful life.

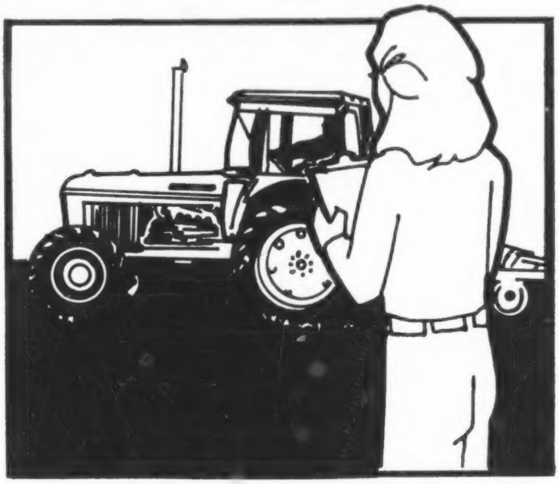


Fig. 19 — Roy And Mary's New Tractor Is A 5-Year Recovery Item

Table C

TABLE REGULAR [ACRS] STATUTORY PERCENTAGE FOR PERSONAL PROPERTY

Recovery Life	Cost Recovery per Year 1st	2nd	3rd	4th	5th	6th	
3	25%	38%	37%	—	—	—	
5	15%	22%	21%	21%	21%	—	
15	5%	10%	9%	8%	7%	7%	(6% — 7th through 15th year)

(*Consult IRS FARMERS TAX GUIDE for current law.)

.15 × $35,000 =	$ 5,250	first year cost recovery
.22 × $35,000 =	$ 7,700	second year cost recovery
.21 × $35,000 =	$ 7,350	third year cost recovery
.21 × $35,000 =	$ 7,350	fourth year cost recovery
.21 × $35,000 =	$ 7,350	fifth year cost recovery
	$35,000	total cost recovery

Straight-line ACRS For Personal And Real Property

Cost recovery for personal property is found by using the straight-line ACRS method. This is determined by dividing the original cost basis by the regular or optional larger recovery period with the first year cost recovery that is independent of the date purchased.

The annual cost recovery for real property is also found with the straight-line ACRS method. This is determined by dividing the original cost basis by the regular or optional longer recovery period with the first year cost recovery that is dependent upon the month purchased.

When Roy and Mary purchased their tractor in July, they considered using the straight-line ACRS method. They used the following information and assumed a recovery period of five years.

By comparing Table C and Table D you will see why Roy and Mary chose the regular ACRS method. It calculates a greater first year cost recovery ($5,250 versus $3,500). Roy and Mary feel that this reflects the true loss in value of the tractor in the first year.

Table D

TABLE	STRAIGHT-LINE ACRS OPTIONAL RECOVERY PERIODS°
In case of:	**You may elect a recovery period of:**
3-year property	3, 5, or 12 years
5-year property	5, 12, or 25 years
15-year real property	15, 35, or 45 years

*Consult IRS Farmers Tax Guide for current law.

$ 3,500	first year cost recovery
$ 7,000	second year cost recovery
$ 7,000	third year cost recovery
$ 7,000	fourth year cost recovery
$ 7,000	fifth year cost recovery
$ 3,500	sixth year cost recovery
$35,000	total cost recovery

Roy chose to use the regular ACRS because it calculated a greater first year cost recovery ($5,250 versus $3,500), and reflects what he feels the tractor's loss in value really is.

OTHER CHARACTERISTICS OF DEPRECIATION

Roy points out that there are several characteristics of depreciation that have not been discussed:

- Income tax benefits arise because the cost of the capital asset is recovered over the useful life of the asset. The shorter the life assigned to the asset, the quicker the income tax benefit is received.

- Raised livestock may not be depreciated when the cash accounting method is used because all costs have been deducted as cash expenses. There are none left to depreciate.

- Nonbreeding livestock in inventory may not be depreciated using the cash accounting method.

- Expensing will affect cost recovery by reducing the cost basis of the property.

- Investment credit may affect cost recovery by reducing the cost basis of the property.

INVESTMENT TAX CREDIT

The business of farming and ranching requires substantial investment. As an incentive to investors, some of the capital invested in agriculture can be recovered quickly by claiming an investment credit (Fig. 20) on your tax return. As a direct tax reduction, rather than a noncash deduction, investment tax credit is often a determining factor in a farmer's purchasing decision. In fact, overemphasizing the affect of an investment tax credit has led more than one farmer into the trap of making uneconomical trade or purchase decisions. These people thought that unneeded equipment was economical because of the tax credit that it produced.

Fig. 20 — Some Capital Invested Can Be Recovered Quickly With An Investment Tax Credit

In the proper perspective, investment tax credit offers a valuable incentive to expand the production assets that are used in a farm or ranch business. It should not be used as a sole reason to purchase equipment. Also, the tax credit is not an elective. It must be taken. If you don't, you may otherwise be charged by the IRS for the tax credits that you didn't claim.

CHARACTERISTICS OF INVESTMENT TAX CREDIT

Roy and Mary try to take full advantage of investment tax credit when making financial management decisions. Roy feels that before using investment tax credit as an income tax management tool, a farmer must know the characteristics of the investment tax credit. Roy points out the following characteristics:

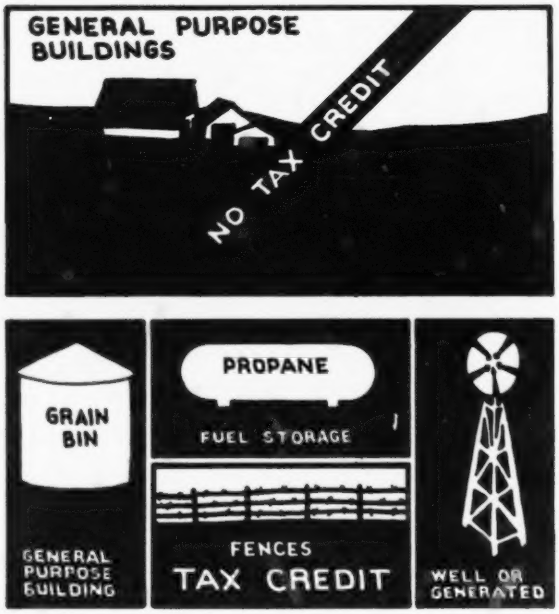


Fig. 21 — To Qualify For Investment Tax Credit, An Asset Must Have At Least A Three Year Useful Life

- Direct reduction of farmer's income tax liability is allowed

- Qualifying assets must have a useful life of at least three years to be eligible for any credit. Examples of qualifying assets (Fig. 21) include:

  - grain storage bins
  - milk storage refrigerators
  - freezer structures
  - corn cribs
  - well providing water for livestock
  - contained feedlot facilities
  - potato storage facilities
  - propane gas tanks
  - water pumps
  - drain tiles or other improvements used to reclaim land for agricultural purposes which are depreciable
  - fences used to confine livestock
  - paved barnyards
  - refrigerated portions of buildings
  - silos
  - gasoline storage tanks and pumps
  - underground watering systems
  - automatic egg houses
  - peanut sheds
  - and similar materials and machines.

- Property must be depreciable or amortizable. Land does not qualify for the investment tax credit.

- Buildings and their structural components generally are not eligible. The IRS has ruled that barns, stables, and poultry houses are not eligible.

- Special-purpose structures may qualify. These are buildings that are an essential part of farming or ranching. These structures are closely related to the use of the property and are expected to be replaced when the property it houses is replaced. An indication of a special-purpose structure is a structure that cannot be used economically for any purpose other than that related to the property it houses (Fig. 22).

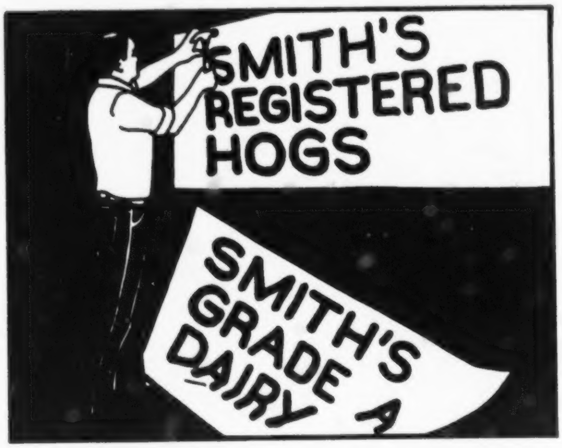


Fig. 22 — Special Purpose Structures Can't Be Used Economically For Any Other Enterprise

- Investment tax credit is limited to the income tax liability up to certain amounts.

- If the amount of credit in any year exceeds the limit imposed, the excess may be carried back three preceding tax years. If the amount is still unused in those years, the credit may be carried forward to the 15 succeeding years.

- If assets in which investment tax credit was taken are disposed of (sold, traded, or salvaged) before the end of the estimated useful life that is used in computing the tax credit, the unused tax credit must be paid back.

- The basis for depreciation may be affected by the amount of investment tax credit taken.

Accurate records must be kept to claim these tax credits. The month and year in which the property is placed in service, the estimated useful life that is used in calculating the credit, the adjusted tax basis of the property, and the date of acquisition and date of disposition must be kept.

Mary says that from an income tax management standpoint, the important thing to remember is that **an investment tax credit reduces the tax bill by the amount of the credit.** A farmer or rancher should be aware of this when planning expenditures so that the total tax bill may be reduced over time.

SPECIAL TAX SITUATIONS

There are a number of situations that may affect a farmer's income bracket by changing the tax structure of the farm or ranch. Some examples include:

Table E

SITUATION	EXAMPLES
Major business expansion	Usually means a large capital investment in both depreciable and nondepreciable property; it is important to know how fast these investments can be recovered, what the effect will be on cash flow, and the effects of capital gains on future sales of the acquired property
Improvement in labor management practices	Improved fringe benefits and bonus plans for key employees
Sale of capital items	Farm land; mineral rights or deposits; herd or breeding livestock; it is important to consider the effects of an installment sale
Change in type of business	Sole proprietorship to a partnership or corporation
Leasing or renting major machinery and equipment	Consider tax advantages as an alternative to outright purchase
Planning for retirement	Postpone income until retirement years by investing in an approved retirement plan
Estate planning	Transfer of ownership from one generation to the next; consider the implications of gift, estate, and income taxes
Farm investments versus nonfarm investments	Evaluate advantages and disadvantages of investing more in farm investments rather than nonfarm investments; consider opportunity costs

INCOME TAX MANAGEMENT STRATEGIES TO LEVEL OUT INCOME

Roy and Mary agree that income tax management strategies should only be used if they are consistent with other good farm management decisions.

An example of this is the time when Roy used a partial budget to see if he would gain or lose by holding 5000 bushels of wheat into another year. In this situation he decided that he would lose $100 profit to save $60 in taxes.

Roy and Mary have used several strategies to maintain a level income and maximize after-tax income (Fig. 23).

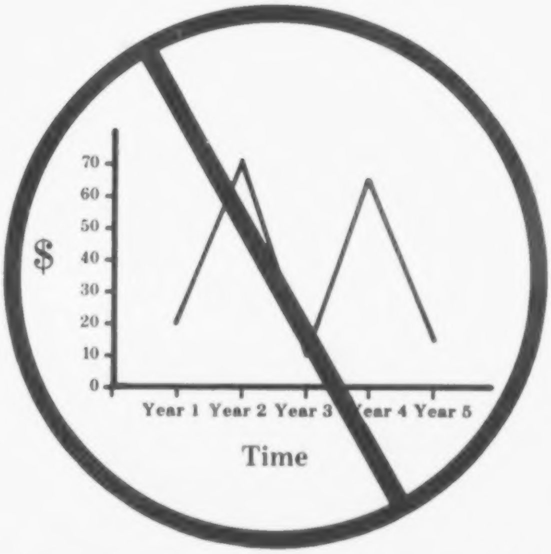


Fig. 23 — Roy And Mary Plan Tax Strategy To Level Out Tax Obligations From Year To Year

STRATEGIES TO INCREASE TAXABLE INCOME

The Snyders are cash method taxpayers. They use the following strategies to increase their taxable income (Fig. 24):

- Postpone expenditures and investments until after the beginning of the next tax year
- Sell marketable grain and livestock before the end of the tax year
- Work with suppliers to pay bills after the beginning of the next tax year
- Use the straight-line ACRS method for cost recovery
- Do not expense (write off) depreciable property
- Do some off-farm or custom work (Mary occasionally substitute teaches and Roy has harvested for other farmers in the area)

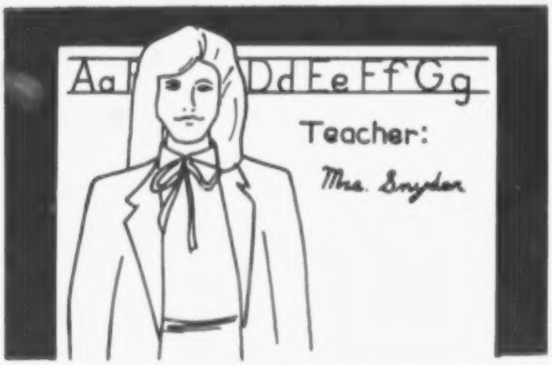


Fig. 24 — The Cash Method Taxpayer Has Options To Increase Taxable Income

STRATEGIES TO DECREASE TAXABLE INCOME

They use the following strategies to delay or decrease taxable income (Fig. 25):

- Postpone some sales to next year.
- Use deferred sales contracts.
- Buy **needed** machinery, equipment, and other supplies **before** the end of the tax year to get investment credit and depreciation.
- Use regular ACRS method for faster cost recovery.
- Expense (write off) the maximum on depreciable property.
- Make advanced purchases of feed and fertilizer.
- Use the income averaging technique if taxable income is $3,000 or more above 120 percent of the average taxable income over the past four years.

Fig. 25 — There Also Are Strategies To Decrease Taxable Income

INCOME TAX DIFFERENCES AMONG FORMS OF FARM BUSINESS ORGANIZATIONS

One factor that should be discussed in income tax management is the primary income tax differences among the farm business organizations. These include:

PRIMARY INCOME TAX DIFFERENCE	SOLE PROPRIETORSHIP	PARTNERSHIP	S CORPORATION	SUBCHAPTER C CORPORATION
Federal tax rate	Earnings taxed as personal income to owner	Distribute earnings to owners; earnings then taxed as personal income for each owner	Distribute earnings to shareholders; earnings then taxed as personal income for each shareholder	Undistributed earnings taxed only once, usually lower rates; distributed earnings (dividends) taxed twice—(1) as part of earnings of corporation and (2) personal income to shareholder
Capital gains	Net capital gains income to owner (40% of capital gains included as part of ordinary income)	Pass net capital gains income to owners (40% included in ordinary income)	Pass net capital gains to shareholders (40% included in ordinary income)	Combines all capital gains with ordinary income to determine taxable income; capital gains rate essentially marginal corporate rate
Capital losses	Net capital loss to owner (only 50% of long term loss deductible, limited to $3,000 or taxable income for given year	Pass net capital loss to owners (only 50% of long term loss deductible, limits)	Cannot pass to shareholders; loss can only be used by corporation as a capital loss carryover	Cannot pass to shareholders; loss can only be deducted to the extent of capital gains
Minimum tax	Figured on benefits received from tax preference items (capital gains subject to alternative minimum tax)	Figured on benefits received from tax preference items (capital gains subject to alternative minimum tax)	Figured on benefits received from tax preference items (capital gains subject to alternative minimum tax)	Figured on benefits received from tax preference items (no alternative minimum tax)
Net operating loss	Operating loss offsets other income for owner (can be carried back three years and forward 15 years)	Operating loss offsets other income for owners (can be carried back three years and forward 15 years)	Operating loss offsets other income for shareholders (can be carried back three years and forward 15 years)	Operating loss can not be passed to shareholders; can be carried over to offset corporate income
Social security tax	Self-employment taxes	Self-employment taxes	Require both corporation and employee to pay social security tax (employer's share is tax deductible expense for the business)	Require both corporation and employee to pay social security tax (employer's share is tax deductible expense for the business)
State income tax [NOTE: Income tax laws vary from state to state.]	Owner's income	Owners' share of income	Stockholders' share of income	Distributed earnings (dividends), corporate income, franchise taxes

SUMMARY OF INCOME TAX MANAGEMENT

Income tax management is the managing of income, expenses, and capital for minimum income tax obligation to help maximize after-tax income. Income tax management pays when annual taxable income deviates from the normal.

It is very important for the farmer and rancher to keep up-to-date on current income tax laws. Useful references are available from the Internal Revenue Service. It is important also to remember that each farm is a unique business, and that income tax strategies that work for one farm may not work for another.

SOCIAL SECURITY TAXES AND BENEFITS

AGRICULTURAL COVERAGE

People in farm activities are generally covered by Social Security if their earnings are from "employment" or "self-employment." As an employee you work for someone else. If you are self-employed you work for yourself. While the benefits are similar, the methods of taxing employed and self-employed people are different.

AGRICULTURAL LABOR

John Jones is a hired farm laborer. He is an employee of Roy Snyder. Jones is paid a fixed weekly wage for his labor. He is under the supervision of Roy. As a farm employee, John has Social Security payments deducted from his wages by Roy. As the employer, Roy also contributes to John's Social Security account (Fig. 26).

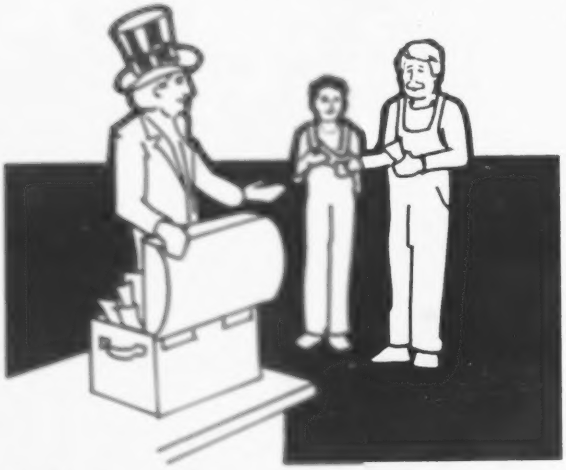


Fig. 26 — John Must Pay Social Security Obligations For His Hired Workers

A farm employee is covered by Social Security, and the employer is subject to social security tax if either one of two situations occur:

- The employee receives cash wages of at least $150 from any one farm employer during the calendar year.
- The employee works for any one farm employer on twenty or more days for cash wages computed on a time basis.

Practically all farm employees are covered.

FAMILY LABOR

There are certain family situations in which no tax is due and no benefits result:

- A spouse who works for the other spouse (Fig. 27)
- A parent who works for his or her child unless the parent works in the child's trade or business
- A child under 21 who works for his or her parent

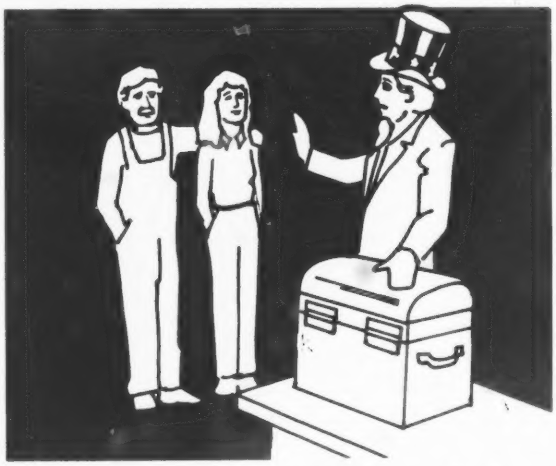


Fig. 27 — There Is No Social Security Payment For Spouse Labor

AGRICULTURAL LABOR DEFINED

Agricultural labor generally includes all the work that is performed on a farm or ranch in the employ of any person. This is in connection with the cultivation of the soil or raising commodities or livestock. The laborer's services are in the employ of the owner, tenant, or operator in connection with farm operation and maintenance and the major portion of the service is performed on the farm (Fig. 28).

Fig. 28 — Ag Laborers Are Supervised By The Farmer Or Rancher

WHAT IS EMPLOYMENT?

For purposes of determining whether John Jones is an employee, the Social Security law turns to legal definitions that have been developed over many years. These rules are not always clear, but certain basic ideas can be found.

An employee performs services for another, and is subject to the control of the employer. This does not mean that Roy must stand by and constantly observe and supervise. It does mean, that Roy has the right, whether he exercises it or not, to have the work performed in such matter and detail as he directs, and that John has a duty to perform the work as directed.

Employees may include: a hired farm hand, a sales clerk, feed mill hand, or a truck driver.

INDEPENDENT CONTRACTORS

An independent contractor is one who agrees to perform certain services for a fixed price. The contractor must meet the specifications as outlined by the employer (Fig. 29). The manner of doing the job and the control over methods and details is retained by the contractor. The independent contractor is the employer of his own employees. He must pay his own self-employment taxes and the employer taxes for his employees.

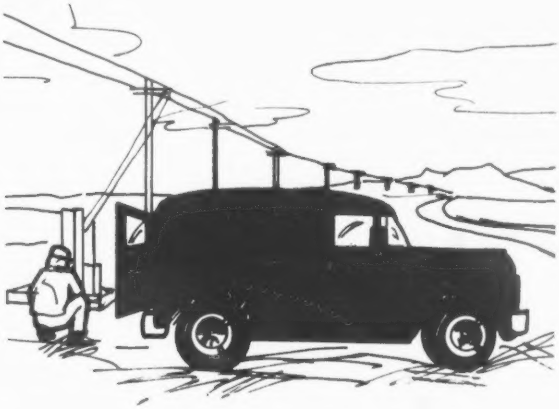


Fig. 29 — Independent Contractors Pay Their Own Employees A Salary And Pay Their Own Tax Obligations

An example of an independent contractor is a professional electrician that is hired for a fee to repair an irrigation well pump. The independent contractor needs no direction or supervision to do the job. The farmer or rancher does not pay Social Security taxes for the independent contractor or deduct Social Security taxes from the fee that is paid to the contractor. The contractor is responsible for the contractor's own Social Security.

SELF-EMPLOYED FARMERS

Roy is a self-employed farmer. He supports himself. He must pay self-employment tax. The self-employment tax is based on the net earnings from the farm business. This is shown on Schedule F (Form 1040). The tax is computed on Schedule SE (Form 1040) and paid when Roy files his income tax return.

Roy and Mary's children may be self-employed if they carry on an activity of their own, such as a 4-H or an FFA project. They must have net earnings of $400 or more.

EMPLOYERS OF AGRICULTURAL LABOR

As an employer of agricultural labor, Roy and Mary are responsible for several administrative tasks for their employees (Fig. 30). Roy and Mary must:

- Have an Employer's Identification Number which is used on all forms that report the employer's Social Security tax payments.
- Keep records of each employee's name, social security number, cash wages, daily records of time worked, basis of payment, and the amount deducted as the employee's share of the social security tax.
- Withhold tax from employee's wages. Social Security tax rates change from year to year. Check the tax laws each year.
- Make reports to the Internal Revenue Service by January 31 each year, and send a W-2 form showing that employee's wages and taxes withheld to the employee.
- Pay social security taxes levied upon employer and employee. The cash amount of taxes for agricultural labor may be deposited in a government depository (usually a local borrowing institution).

1. PAY SS TAXES of EMPLOYER & EMPLOYEES
2. EMPLOYERS ID NR.
3. EMPLOYEE RECORDS
4 WITHOLD TAX FROM EMPLOYEES
5. REPORT TO IRS BY JAN 31
6. SEND W-2 FORM TO EMPLOYEES

Fig. 30 — Employers Of Ag Laborers Have Many Responsibilities

SOCIAL SECURITY BENEFITS AND MEDICARE

Mary has read several articles in the local newspaper about Social Security. Since she is not sure what benefits are available, she visits the local Social Security office. Mary finds that there are three kinds of Social Security benefits (Fig. 31):

- Old age and survivor benefits which include retirement payments to a retiree at age 62, to a spouse at age 62 or to someone that is caring for a child that is entitled to benefits, and to certain children.

  Survivor payments which include a death benefit and monthly payments go to a surviving spouse who is 60 years old, to someone caring for a child eligible for social security, to surviving children under 18 years old and to dependent children.

- Disability benefits which include payments because of disability go to the disabled and their dependents and to disabled children over eighteen.

- Hospital and medical benefits (Medicare) that provide hospital insurance and voluntary medical insurance pays hospital expenses and doctor bills for most people 65 and over.

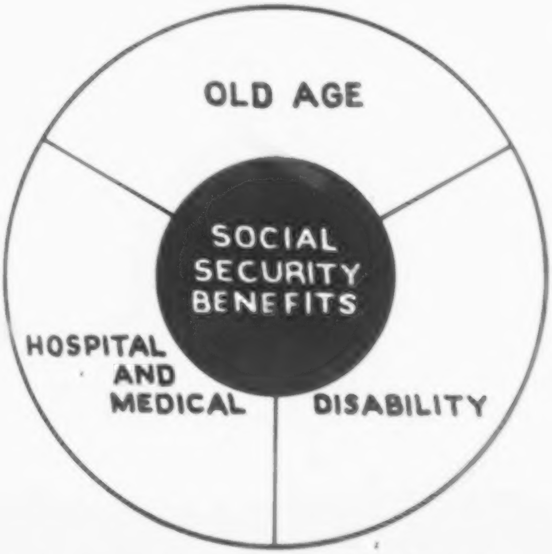
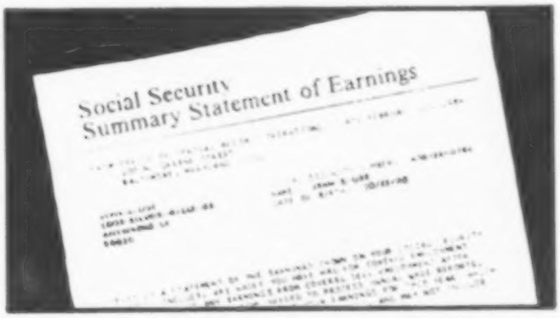


Fig. 31 — There Are Three Kinds Of Social Security Benefits

CHECKING SOCIAL SECURITY RECORDS

Mary also learned that the Social Security Administration maintains records of earnings of each citizen and uses this data to calculate benefits (Fig. 32). Any citizen has the right to check his or her records. They may request a statement of earnings as often as once a year.



Social Security
Summary Statement of Earnings

Fig. 32 — The Social Security Office Keeps A Record Of Earnings For Each Tax Payer

Generally, the record of earnings can not be corrected after three years, three months, and fifteen days. Therefore, Roy and Mary check their earnings every three years to make sure that the Social Security taxes they pay are properly credited to their Social Security numbers.

ESTATE TAXES

One of the major factors in estate planning is the impact of taxes. Death taxes or inheritance taxes can deplete an estate and reduce the amount of property which can be left to a spouse, children, and other heirs. The Federal Government levies a tax on transfers during life and at death. Inheritance tax is generally collected by State governments.

ESTATE PLANNING

There are many definitions of estate planning, but all of them recognize the basic fact that a person plans the acquisition, enjoyment, and distribution of property for the benefit of their family. Everyone has an estate plan whether they know it or not. If they do not have a formal, organized plan, they have bits and pieces of a plan. The purchase of insurance, the sale of property on an installment basis, the taking of title in joint tenancy, and many other common acts are estate planning decisions. A will (Fig. 33) is a form of an estate plan. Without a will, the state will distribute property as it sees fit. Some formal estate planning is needed by everyone.

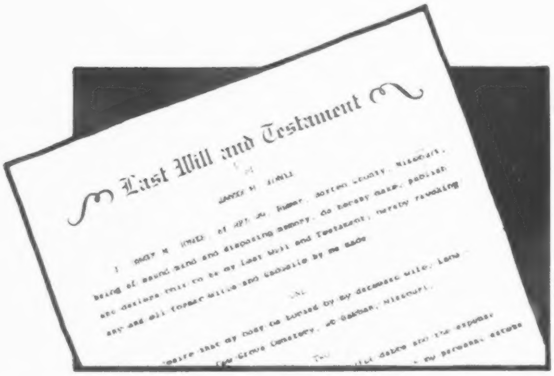


Fig. 33 — A Will Is A Form Of Estate Planning

ESTATE TRANSFER

A death by a farm or ranch owner forces an estate transfer. Because of this, and because of the inheritance rights and interests which children have in the property of parents, there will always be problems of transferring property between generations. The problem is frequently complicated by having to provide for a widow as well as children, plus a desire to treat all children equally. On top of all this, most parents must depend on the farm and its income for support during old age.

Faced with these problems, and not knowing what do do, many families do nothing, or delay planning until it's too late. Many problems can be eliminated by proper planning. Determining the facts in the particular transfer problem, and understanding the alternative ways of handling the problem are steps that must be taken.

Fig. 34 — Gift Taxes Are Levied On Transfers Of Assets

UNIFIED FEDERAL ESTATE AND GIFT TAX

The Federal government levies a gift tax (Fig. 34) on transfers during life and an estate tax (Fig. 35) on transfers after death. The rate schedule is the same for both taxes. There is a single credit which applies against taxes on lifetime gifts, and if any credit remains, against estate taxes at death. Taxes on gifts during life are treated as advance payments due at death on all transfers during life and death.

Fig. 35 — Estate Taxes Are Levied When Estates Are Transferred

Under the Economic Recovery Act of 1981, there is a credit against the combined gift and estate tax. Check this credit every year. In addition, a marital deduction allows a farmer to make tax-free transfers to a spouse during life and at death.

INCOME TAXES AFFECT ESTATE PLANNING

Income taxes also are of concern in tax planning. Income tax savings during life may create additional capital to be used or passed on. Also, the way a will or trust is drawn will determine how much the beneficiaries will have to pay in income taxes.

ADDITIONAL INFORMATION

Information on farm estate planning devices and how they work can be found in pamphlets published by many state agricultural universities. They are very helpful sources of ideas. No written information can substitute for a farmer's own lawyer. An informed client makes better use of their lawyer's time. Learn as much as you can. Then visit your lawyer. Estate planning involves a mixture of many areas of law and taxes. It is important that it is done correctly.

BUSINESS ORGANIZATIONS

CHAPTER 10

Fig. 1 — Am I Using The Best Business Organization?

INTRODUCTION

When you start or reorganize a farm or ranch, one of the first questions to answer is how to structure the business part of the operation (Fig. 1).

Each family and each agriculture situation is unique. Each has a different set of goals. You must analyze the situation and make a careful decision about how you are going to put your organization together.

You must weigh the needs of your operation against the abilities of each agricultural business organization in order to strike a workable balance (Fig. 2). This chapter gives the advantages and disadvantages of the most common types of organizations that are used to structure agribusinesses.

Fig. 2 — Balance Agricultural Needs And Organizational Abilities

BUSINESS ORGANIZATION PRINCIPLES

Here are a few established principles that will help you match your needs with an organization (Fig. 3):

- The organization should be as **simple** as possible.
- The organization should allow you an **access** to sufficient resources such as capital, land, labor, and management.
- The organization should allow you to **plan** ahead for as many years as possible. This helps you cut uncertainty to a minimum.
- The organization should help you **use** your land, labor, capital, and machinery more **efficiently.**
- The organization should **distribute benefits fairly** on the basis of contributions to the business.

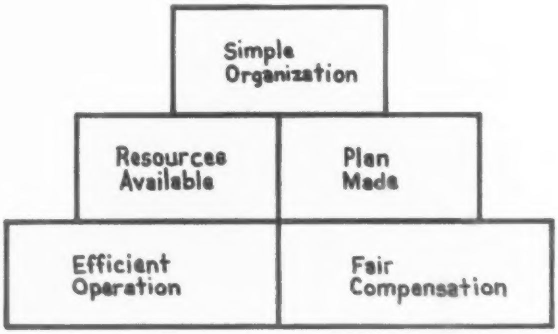


Fig. 3 — The Principles Of A Good Organization

FACTORS TO CONSIDER

If you choose a business organization on only one characteristic you will probably make a costly mistake. As an example, you may choose an easy method of obtaining credit. Although getting credit may be important at first, other considerations, such as estate planning, may become more important in the long run. Consider all these factors when you set up an organization (Fig.4):

- Who owns the business organization?
- What is the ability to acquire resources such as land, labor, and capital?
- How long is the expected life of the organization?
- What is the liability of the owners?
- Who participates in management decisions?
- What is the compensation for management?
- How easy is it to transfer business ownership?
- What problems are there for tax planning (income and estate taxes)?
- What problems are there for estate planning?

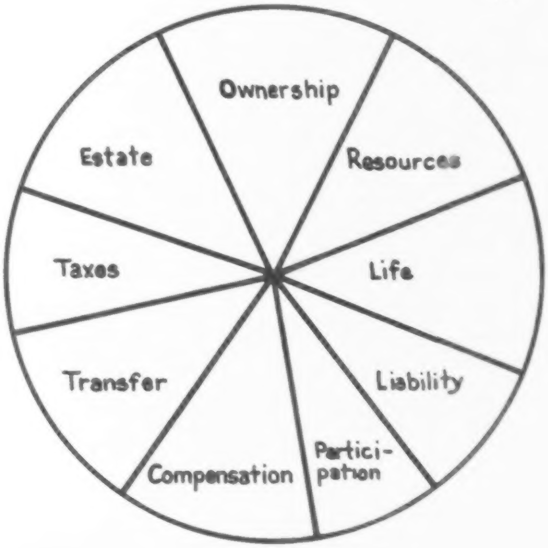


Fig. 4 — Factors To Consider When Setting Up An Organization

AGRICULTURAL BUSINESS ORGANIZATIONS

There are three primary farm business organizations to choose from:

- Sole proprietorship
- Partnership
- Corporation

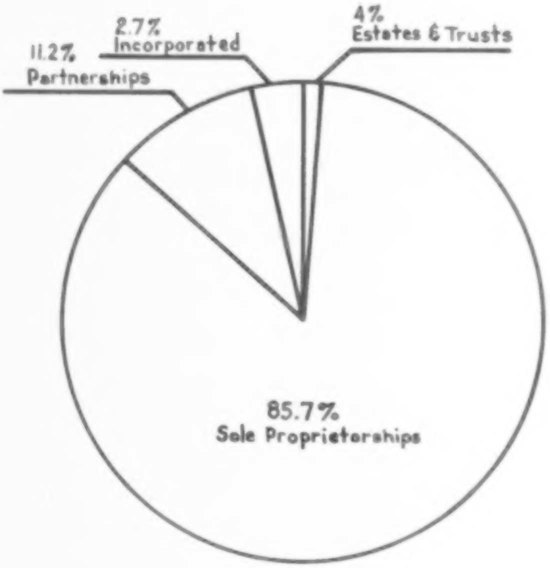


Fig. 5 — Most Farm Businesses Are Sole Proprietorships

SOLE PROPRIETORSHIP

Most farm businesses are managed by an individual operator rather than a management team. The latest census of agriculture indicates that 85.7 percent of U.S. farms with sales over $25,000 per year are operated as sole proprietorships, 11.2 percent are partnerships, 2.7 percent are incorporated, and 0.4 percent are in estates and trusts (Fig. 5).

Keith, his wife Phyllis, and his three children have been operating their family farm for five years. Keith selected the sole proprietorship business organization because it was easily formed with few government regulations and restrictions.

Keith can make decisions fast with this organization. He is the boss. All the managerial decisions that affect business rests with Keith.

As a sole proprietor, Keith may quickly and easily expand or contract the size of his business, add or eliminate enterprises, and increase or decrease inventory as he sees fit. Because Keith is solely responsible for managerial decisions, he can change the direction of business enterprises faster than if he had to consult a partner or a group of stockholders. Keith knows that his quick decisions to buy or sell let him take advantage of sudden opportunities.

Since the sole proprietor directly receives the rewards of good management and labor, Keith has strong incentive to work hard. He strives to make the best management decisions (Fig. 6). Another advantage of a sole proprietorship is that problems of disagreement among owners cannot arise.

Fig. 6 — The Sole Proprietor Makes All Of The Decisions

Disadvantages Of A Sole Proprietorship

Looking back on his experiences over the past five years, Keith remembers several disadvantages of the sole proprietorship form of business organization.

- Raising capital may be difficult.
- A proprietor must be responsible for purchasing, production, and marketing. The sole proprietor may not have time to make careful management decisions in some situations.
- A sole proprietor must like to make decisions.
- The sole proprietor is responsible for all debts.
- Enterprises may be stopped because of the lack of stability and permanence. The sole proprietor might become injured or unable to manage the business.

Raising Capital And Expanding Under A Sole Proprietorship

The ways of getting capital may be limited in a sole proprietorship. The biggest problem for Keith is that he must work every day on the farm. He is not as free as other people in corporations or partnerships to seek capital and make business deals.

Keith knows about a few good techniques for getting capital on his own to expand his operation (Fig. 7):

- He leases, rather than owns assets.
- Keith does all the work and saves his money. He doesn't employ help.
- Keith's parents cosigned several farm operating notes.
- Keith rents his parents' farm equipment.
- Phyllis has a job in town to earn part of the income for the family living expenses.

These are a few ways that can be used to make a sole proprietorship work. Unique situations and problems may require **creative** answers.

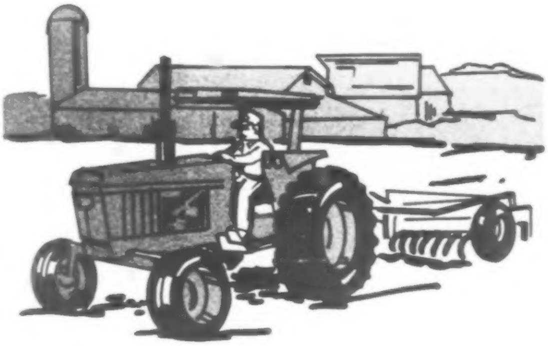


Fig. 7 — The Capital Sources For Sole Proprietorships Are: Do Your Own Work, Lease As Much As Possible, Borrow Equipment When Possible.

PARTNERSHIPS

Greg Landon has a different situation. Greg is a recent graduate of the agricultural college at the state university. He has always worked for his parents during school vacations. Now Greg wants to return to the family farm and continue farming. He has discussed this with his parents several times, but no decisions have been made.

Greg also is thinking about getting married. He needs to determine whether he wants to return to the farm or plan another career.

Greg and his parents meet with a farm management consultant to discuss a partnership agreement. Greg knows that he will be unable to compete in farming unless he can form a partnership arrangement, or get financial backing from his parents (Fig. 8).

Fig. 8 — The Landons Meet With A Consultant To Discuss A Partnership

During the first meeting with Greg and his parents, the farm management consultant states that a partnership is an association of two or more people who carry on a business together as co-owners with the goal of making a profit. The consultant points out several facts about a partnership (Fig. 9). They are:

- Death dissolves the partnership unless special arrangements are made.
- Partnerships, as such, pay no income taxes (each partner must report their share of partnership income on their own income tax return).
- Each member is subject to liability for all debts.
- Real and personal property may be owned in the name of the partnership, or it may be owned in the name of one or more of the partners.
- Profits and losses should be divided in accordance with a specific agreement.

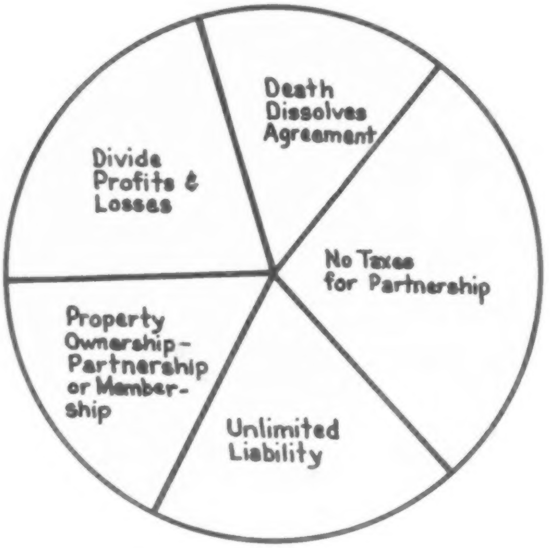

Death Dissolves Agreement
No Taxes for Partnership
Unlimited Liability
Property Ownership - Partnership or Member-ship
Divide Profits & Losses

Fig. 9 — The Principles Of A Partnership Agreement

The consultant also points out several personal qualities that help make a partnership succeed (Fig. 10). These qualities included:

- The goals of all participants, including the spouses, should be the same.
- Greg, his fiancee, and his parents' goals must be compatible. They must respect everyone's opinion.
- The business must be large enough to provide an adequate living for all parties.
- There should be complete and accurate records, sound management, and common sense in the handling of money.
- There should be a written agreement.

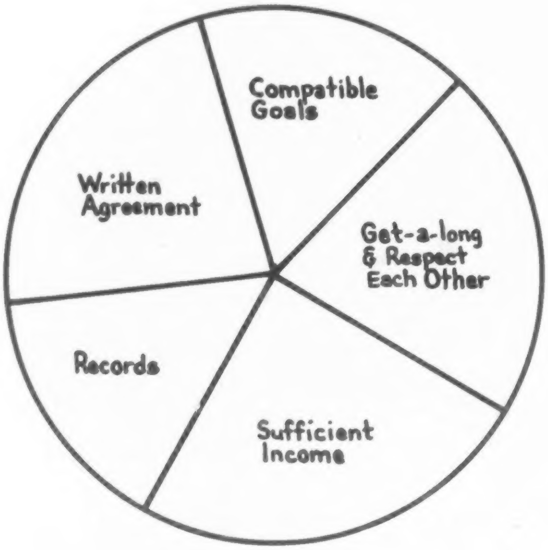


Fig. 10 — The Qualities Of A Good Partnership

During the second meeting between Greg, his parents, and the farm management consultant, they discuss the advantages and disadvantages of forming a partnership agreement.

Advantages

The consultant points out that pooling capital and know-how in a partnership is a major attraction for many parent and child arrangements (Fig. 11). The combinations of the wisdom and experience of the parent and the energy and labor of the child often make a good team.

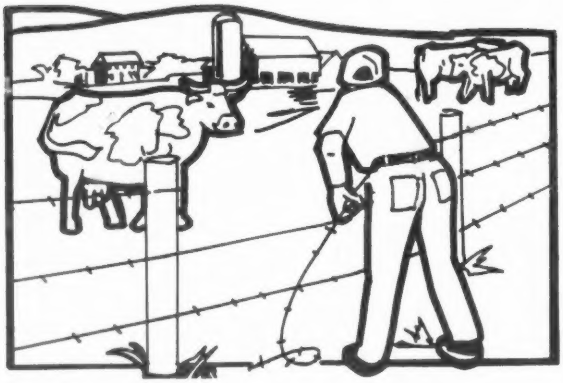


Fig. 11 — Capital Sources For Partnerships Are: Pooled Money And Labor, Loans That Are Co-signed By Each Partner.

Greg also points out that both labor and management responsibilities could be divided between himself and his father according to their individual abilities. For example, Greg could be responsible for the management and operation of the dairy enterprise and his father could be responsible for the swine enterprise and cropping program. This would allow each partner to specialize and yet remain in a position to help the other during peak labor periods.

Disadvantages

Greg's father points out that he would be making a considerable sacrifice by entering into a partnership. He states that he and his wife have accumulated sufficient resources to take life a little easier. Forming a partnership with his son means expanding the business, borrowing more money, reducing personal expenditures and working as hard as ever for a number of additional years.

The consultant points out that the objectives and opinions between partners may differ. Greg may want to expand more rapidly, maintain a higher standard of living, and take more risks than his father.

If either partner becomes ill or dies it may have a tragic effect on the partnership arrangement by causing an untimely legal dissolution of the organization.

Other disadvantages are:

- The unlimited liability of each partner may restrict credit use. Unless partners have complete faith in each other, there is a tendency to adopt restrictive measures in the partnership agreement which restrict management or delay management decisions.

- Each partner is liable for wrong doings in connection with the farm business. A partner may impose liability upon other partners for wrong doings.

Fig. 12 — Greg's Family Needs Written Contracts To Make The Partnership Work

Completing The Partnership Agreement

Greg, his fiancee Debbie, and Greg's parents continue to meet and discuss questions that are important to developing a successful partnership agreement. After considerable thought and deliberation they decide to enter into a four-party partnership agreement. With the help of an attorney, familiar with farm partnerships, they develop a written partnership agreement. Some provisions in the agreement include (Fig. 12):

- A transfer of ownership through a buy-out arrangement at the termination of the partnership agreement.

- Greg's parents will lease machinery, equipment and land to the partnership in the initial stages. The partnership eventually will buy these capital assets.

- A life insurance plan is obtained that enables a partner to buy the other partner's share if one becomes incapacitated or deceased.

- They purchase an insurance program with personal liability and employee liability insurance to overcome the disadvantage of unlimited liability.

- Each partner shares equally in general management responsibilities. Greg is primarily responsible for the dairy enterprise and his father is primarily responsible for the swine enterprise and cropping program.

- Greg and his father will keep their own records and pool them for the overall record system.

- Each partner is paid on the basis of the value of the contributions to the partnership.

- Once they are married, Greg and Debbie will move into a small home on the property.

The proper legal agreements are only a part of the requirement for a successful partnership. No matter how fair and proper the agreement, the partnership will not be successful unless earnings are adequate to support all the partners. Greg and his parents know that many family partnerships fail because of disagreements and misunderstandings. They also recognize that they may have covered only a few of the possible problems that must be ironed out before a partnership arrangement can be successful.

Greg and his parents plan to meet regularly to discuss and update their partnership agreement. Properly planned, the partnership can meet the need for a business arrangement that will encourage good farming practices and be fair to all parties.

LIMITED PARTNERSHIP

A variation of the ordinary partnership is the limited partnership. A limited partnership holds one or more of the partner's liable for the debts and obligations of the business (Fig. 13). Strict compliance with the requirements of a limited partnership is necessary for limited partners to avoid liability.

Fig. 13 — The Limited Partnership Limits The Liability Of One Partner

The limited partner or partners cannot participate in the management of the business nor can their names appear in the partnership name. The partnership agreement must be in writing and specifically indicate the share of profit to be paid to the limited partner. The agreement must be recorded so that there is constructive notice to customers who may be doing business with the partnership. There are other technical requirements that should be understood before a limited partnership is used. If you consider a limited partnership, consult an attorney to draft the agreement.

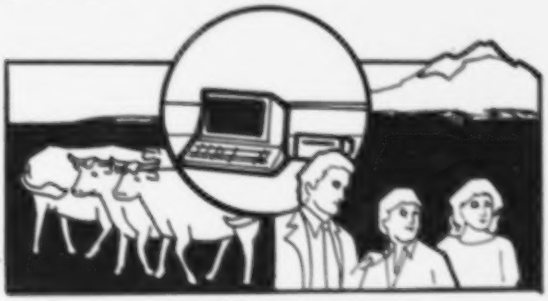


Fig. 14 — The Corporation Is A Team Of Individuals

FARM CORPORATIONS

John Lloyd began farming as a sole proprietor over thirty years ago. Now, John and his wife Emma are thinking about their future years and their family. They have four children: Katie, 21; who is in a custom hay baling operation with her two younger brothers, Phil, 16, and Joe, 14. John, Jr., 19, married soon after graduation and is working in the family farming operation. The Lloyd's farm 4500 acres of crop land and maintain a commercial beef herd of 100 head.

The Lloyds are aware that an increasing number of farm families are incorporating their farm operations (Fig. 14) to take advantage of the favorable characteristics of this type of ownership. Among the factors which have encouraged others to form a farm corporation are:

- The opportunities for estate planning
- The continuity of business life
- The possible reduced tax burden
- The limited personal liability
- The possible access to more capital

The Lloyds realize that the objectives of individuals vary. What may be a factor that causes one family to choose incorporation may be the very factor that causes another family to decide against incorporation. The Lloyds must carefully consider all of the characteristics (Fig. 15) of the corporation to determine if it will meet the needs of their family.

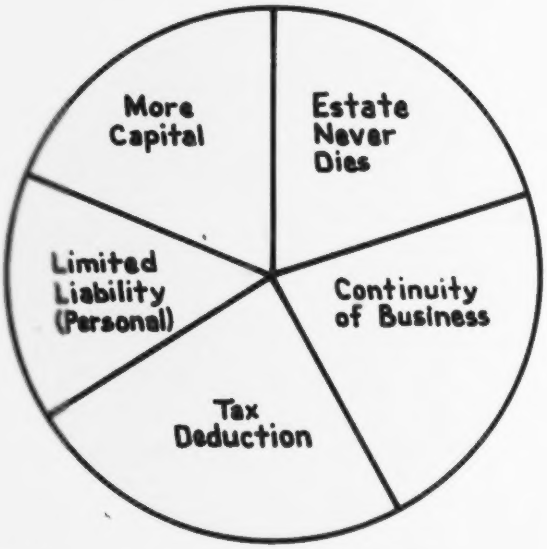


Fig. 15 — The Characteristics Of A Corporation

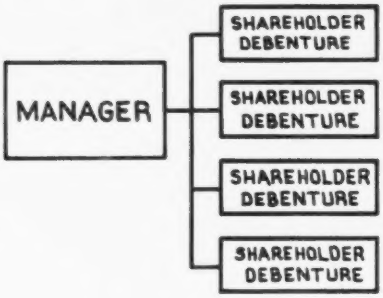
Advantages Of Farm Corporations

One of the first things that the Lloyds did was to talk to their neighbors that are in farm corporations. They then met with their attorney to learn the advantages and disadvantages of incorporation. Here are the advantages that they found:

Advantages of Farm Corporations

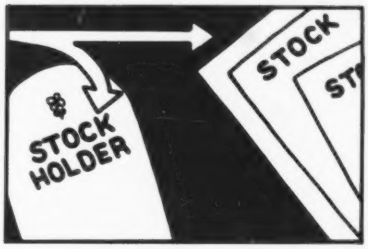
Economic reasons

The Lloyds may pool or acquire additional capital if necessary. They may also combine their special skills, abilities and ideas. However, since the Lloyds are considering a family corporation there probably will be no equity capital from outside their farming operation.



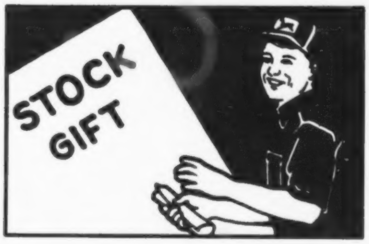
Separation of ownership and management

Only John, Jr. has indicated an interest in continuing in the farming operation. John and Emma, the parents, want the other children to share in the inheritance, but not in the management of the farm. In this situation, the parents can give the other children a long-term promissory note that has a value equal to the share of the estate that John receives. This note (debenture) will not appreciate. The other children will not have a voice in the management of the farm. Income is derived through interest payments which are deductible for the corporation.



Ease of continuing in business

Upon the death of a stockholder in a farm corporation, only the stock owned by the person who died is subject to probate. The underlying assets are not.



Easily transferred ownership

Gifts of minority stock can be given to the other children to help pursuade them to continue farming. This stock, unlike real estate gifts, does not have to be recorded with the county clerk, and is therefore more private.

Advantages of Farm Corporations

Opportunity for tax savings

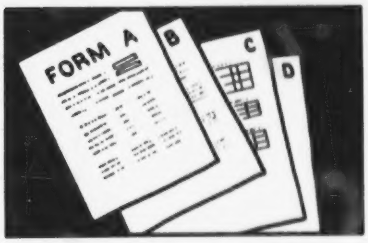
A farming corporation may have certain income tax advantages for the Lloyds. This depends on such factors as the income earned and their tax brackets. Also certain fringe benefits are tax deductible such as insurance and profit sharing plans. These are not deductible for a self employed farmer.

Limited liability

A corporate stockholder's liability is limited to the stockholder's contribution of capital stock. The Lloyds may state bylaws that say if one shareholder files bankruptcy and creditors attempt to claim the stock, there would be an automatic buy back at a fixed price by the rest of the corporation. This would be useful in the event of a divorce or an attempted sale of corporate stock to someone outside the Lloyd family.

Disadvantages Of Farm Corporations

The disadvantages that the Lloyds encounter in their research of farm corporations include:



Corporations are complicated and costly to organize

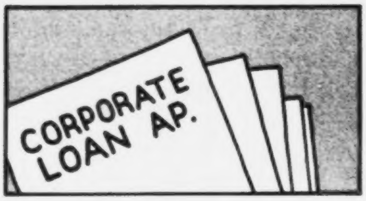
More "red tape" is involved in forming a corporation than other forms of business organizations. Expenses include filing fees, Articles of Incorporation, and initial legal and accounting expenses.

These are continuing costs to maintain the farm corporation

Corporations must operate in compliance with a corporate charter. There are more rigid laws. The law requires corporations to keep records of directors and shareholders meetings and to pay franchise taxes. There may be additional costs for bookkeeping and accounting services for the Lloyds.

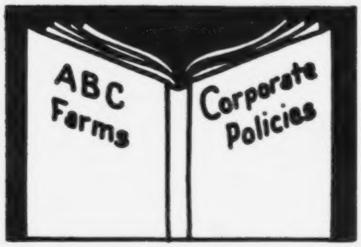
207

Disadvantages Of Farm Corporations


CORPORATE LOAN AP.

There may be difficulty in obtaining credit from lending institutions

Some lending institutions may be unfamiliar with farm corporations. They may require more complicated borrowing procedures for the farm corporation. Sometimes shareholders may be required to cosign the corporation's notes.

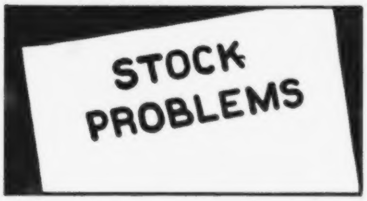


There may be no freedom of action

The Lloyds may discover that some farm families have difficulty adjusting to a corporation after a sole proprietorship. Money in the corporation account cannot be legally spent for personal use. Management decisions must be made in accordance with corporation policies, procedures, and bylaws. Good business practices dictate that both employee and personal liability insurance be carried by the farm corporation.

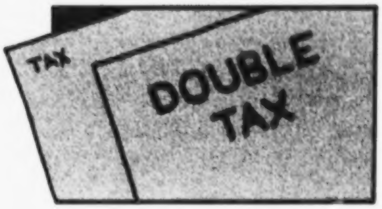
The corporation can be sued on contracts that are made in the corporation name or for torts by the corporation officers or agents.

As a sole proprietor, the Lloyds may be exempt from a creditor's claim against property such as the homestead, implements and a limited number of livestock and feed. These exemptions are lost if such properties are transferred to the corporation.



There may be minority stockholder problems

Second generation stockholders such as the Lloyds grandchildren may receive a few shares of the corporation. They may be dissatisfied with dividends and rights. A corporation must make special arrangements to handle these potential problems.



Income tax laws are unique for corporations

Corporations may pay more taxes on gains from the sale of capital assets than partnerships or sole proprietorships. Also, a corporation pays income tax on its income. Shareholders may have to pay income tax on dividends from the corporation.

Corporations may cause complicated and expensive termination

The Lloyds should not consider incorporation unless they intend to continue with that form of organization indefinitely.

Additional capital gains tax may have to be paid when the corporation is dissolved if the farm property has appreciated in value.

REGULAR CORPORATION VERSUS THE TAX-OPTION S CORPORATION

Another factor that the Lloyds must consider if they incorporate their business is the kind of corporation that they want. They may consider an S Corporation.

An S Corporation is structured as a corporation for all purposes except taxation. For the purpose of taxation, each shareholder's portion of long term capital gains, operating losses, and undistributed taxable income is considered similar to that of partners operating under a partnership agreement. In this way the individual shareholders pay tax on any income generated by the corporation as part of their individual income (Fig. 16). To qualify for S Corporation treatment, a corporation must meet certain conditions in the Internal Revenue Service tax regulations.

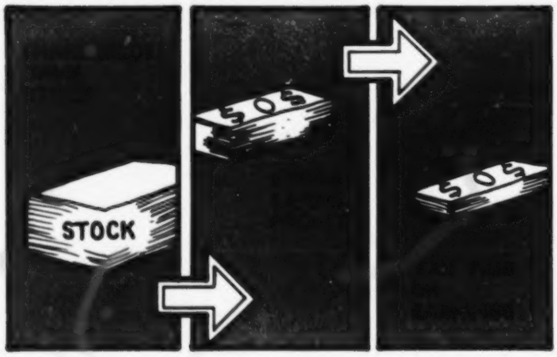


Fig. 16 — The S Corporation Is Structured For All Purposes Except Taxation

COMPARING THE THREE PRIMARY FARM BUSINESS ORGANIZATIONS

The Lloyds seek legal counsel and review their farm business, family goals, and objectives. Their decision is made after carefully weighing the advantages and disadvantages of all of the alternatives in both the short run and the long run.

The corporation form of business organization is best for the Lloyds. It provides the parents with a vehicle that they can use to pass on the estate to their children on a fair basis.

COOPERATIVES AS A MEANS OF DOING BUSINESS

As with a corporation, the cooperative is a legal person distinct from its members. Unlike the regular corporation, however, the cooperative is not organized for making a profit (Fig. 17). The cooperative exists only to provide needed services for its member owners.

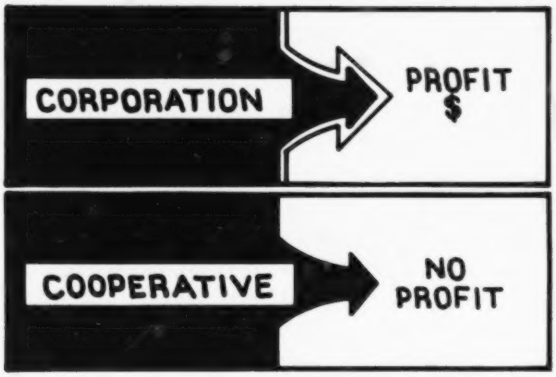


Fig. 17 — The Cooperative Compared To The Corporation

KINDS OF COOPERATIVES

As an assignment for his vocational agriculture class, Jim Baily studies cooperatives. Through his research, Jim finds that most cooperatives are agribusiness firms.

CHARACTERISTICS OF COOPERATIVES

As Jim continues his research of cooperatives he finds these characteristics (Fig. 18):

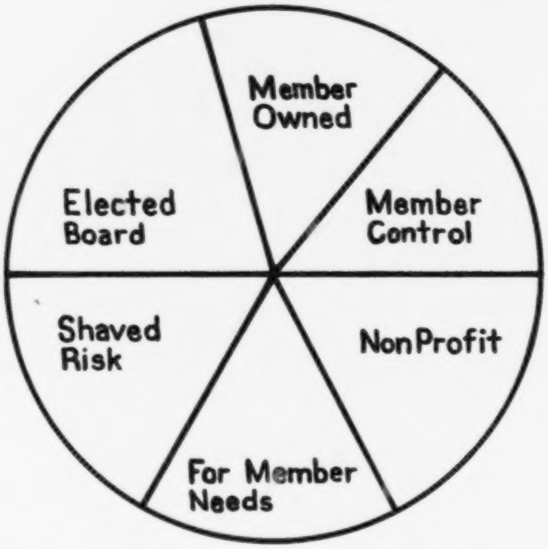


Fig. 18 — Characteristics Required For Cooperatives

- Cooperative businesses are owned by members who use them. Members do business directly with the cooperative.

- Cooperatives emphasize member control. Each member has some voice in the cooperative business affairs. Each member helps select the board of directors.

- Cooperative businesses are operated on a nonprofit basis. When profits are accidentally made, they are returned to members as patronage dividends.

- Cooperatives are organized in response to the mutual interest and needs the of members. Membership in the cooperative is voluntary. Members are free to patronize the cooperative or go elsewhere with their business.

- Members of a cooperative share risk, returns above cost of operation (patronage divided), and financial support in proportion to the amount of business that they do with the cooperative.

- Members of the cooperative elect a board of directors. This board is responsible for hiring management, setting policy, and insuring that the cooperative is operated in a manner consistent with the wishes of a majority of the members.

WAYS COOPERATIVES ARE FINANCED

Jim's study reveals that cooperatives, the same as any business organization, must have capital to operate. The members must furnish the capital or it must be borrowed. The cooperative capital needs include:

- Operating money for the purchase of inventories and operating needs of the cooperative

- Cooperatives construct elevators, processing plants, and buildings to meet the needs of the members

- Cooperatives purchase land for cooperative owned capital assets

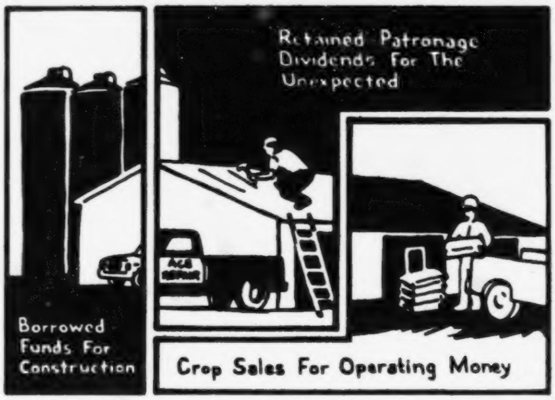

Retained Patronage Dividends For The Unexpected
Borrowed Funds For Construction
Crop Sales For Operating Money

Fig. 19 — Cooperatives Are Financed By The Members

KIND	EXAMPLES OF SERVICES PROVIDED
Marketing	**Storage of commodity, such as grain in elevators; Processing and distribution of commodities such as milk, dairy products, orange juice, produce**
Input supply	**Purchasing operating inputs in quantity and selling to individual members. Inputs may include: feed, fuel, labor, fertilizer, and supplies.**
Services	**Food buying coops, feeder pig coops, coop auction sales, insurance, and electricity through rural electric cooperatives.**
Credit	**Three lending institutions comprise the Farm Credit System: Production Credit Association (PCA), Federal Land Bank, and Bank for Cooperatives.**

Jim discovers several ways that cooperatives are financed (Fig. 19):

- Stock is sold in the cooperative. The stock that a member buys in a cooperative is unlike the stock of a regular corporation. Cooperative stock cannot appreciate in value.

- Members can use cooperative funds to finance operations and invest in long-term assets.

- There is a retention of a portion of the profits in the cooperative. This is paid to members as patronage dividends. These are called retained earnings. A successful cooperative will be able to repay members the retained earnings (sometimes referred to as revolving funds) over a period of years.

In the concluding remarks for his assignment, Jim states that cooperatives have been an important competitive force in agribusiness. He further states that cooperatives often provide goods and services to farmers and ranchers at lower costs than other sources. That has helped make agribusiness profitable by reducing operating costs. Sometimes cooperative sales organizations can get a higher price for agricultural products. That too helps make agriculture profitable by increasing income.

Compare Organizations

CATEGORY	SOLE PROPRIETOR	PARTNERSHIP	CORPORATION
Ownership	Single individual	Two or more individuals	A legal, separate entity separate from stockholders
Continuity of ownership	Death terminates and there is liquidation; there may be transfer of intent during life	Business terminates with death of partner or at agreed time; sale to surviving partner or partners; liquidation	Forever, or for a fixed number of years; in case of death, stock passes by will or inheritance
Liability of owners	Proprietor liable	Partners, except limited partners, are liable for all of partnerships obligations	Corporation is liable for obligations; in some cases stockholders may be asked to sign separate payment notes
Record keeping	Must have records adequate to prepare defensible income tax return	Must file information tax return; complete set of records kept so that each partner knows how business stands at any given time	Comprehensive set of accounting records required; minutes of shareholder and board of director meetings
Capital	Personal investments, loans	Partner contributions; loans	Shareholders stock; sale of stock; loans
Compensation of management	Sole recipient of profits and losses	Partners share all profits or losses; distribution of profits per agreement	Employees profitsharing and fringe benefits program; constant salary for management and employees plus bonus in a profitable year; dividends for stockholders
Management decisions and limits on business	Proprietor fully responsible	Ability and agreement of partners; partners may specialize	Directors decisions; Articles of Incorporation; state law
Income taxes	Tax on income of individual and related tax laws	Each partner reports share of profits or loss on individual income tax return	Regular corporation: Corporations file a tax return and pay tax on income; salaries to employees and shareholders deductible S Corporation: Each shareholder reports shared income, operating loss or capital gain; IRS information report filed by corporation
Estate taxes	Based on value of proprietor's estate	Based on each partner's estate value, considering not only all separate property but property in partnership as well	Based on value on shares of stock and other assets, including other separate property

AG LAW

CHAPTER 11

INTRODUCTION

Farm and ranch managers deal with the legal aspect of agriculture on a daily basis (Fig. 1).

Legal documents have words that have special meaning (Fig. 2). Language in a legal document may not mean what you think. This chapter will help you recognize and understand some of these words.

Fig. 1 — Farmers And Ranchers Deal With The Law All Of The Time

This chapter is not a substitute for legal or tax counsel. In this chapter you only will learn about some of the normal legal aspects of business transactions such as:

- Contracts
- Legal liabilities of farmers and ranchers
- Farmer's rights
- Insurance
- Tax-sheltered retirement plans
- Estate planning

You should know enough legal facts to help you make sound decisions. You must realize that the law protects your rights. It also provides guidelines that you can use when you deal with others.

Fig. 2 — Legal Documents Are Written With Legal Words

CHOOSING COUNSEL

You must know the law before it can help you. You have an ally in all legal matters — your attorney. Your attorney is your counsel. He or she can help you when you find it difficult to interpret legal documents.

Consult a competent attorney when you have questions, because ignorance of the law is no excuse (Fig. 3).

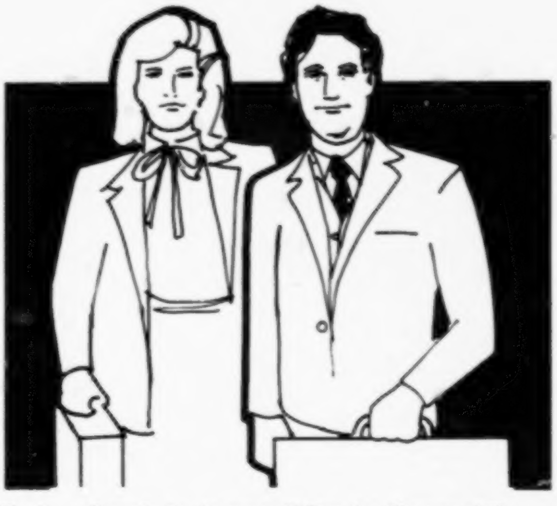


Fig. 3 — Consult An Attorney If You Are Unsure of The Law

It is generally recognized that:

- Attorney's fees are cheaper than a court trial
- When there are differences of opinion, it is usually less expensive and more satisfactory to compromise than to take the question to court. Attorneys can help develop a compromise.
- Attorneys vary in their competency, as do farmers and ranchers.

Get an attorney that you trust. Get one that you know you can go to when you have problems. Get an attorney who knows their own limits. They should not hesitate to refer you to someone else when they cannot answer your questions or take care of your problems.

SOURCES OF LAW

Where does the law come from? There are four sources which have produced the laws that hold our society together (Fig. 4):

- Custom

  Rules that develop through custom and usage often become statutory law. Judges may use these customs as guides when they make court decisions. When this happens custom becomes "common law".

  For example: Treaties and trade pacts are forms of international agreements often based on the customs of the people involved.

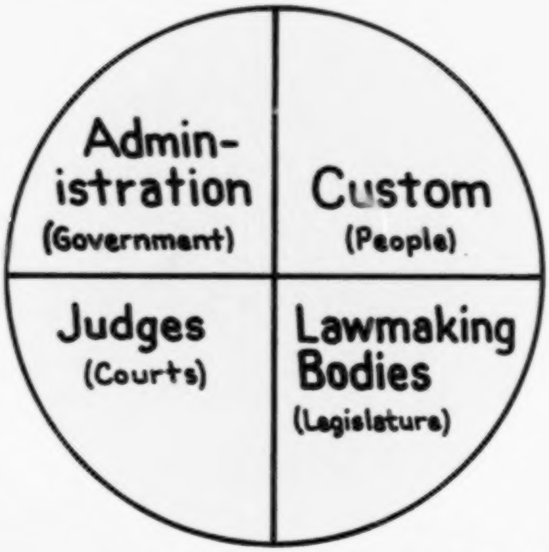


Fig. 4 — There Are Four Major Sources Of The Law

- Lawmaking bodies

  The Congress and city and state legislatures write statutory and constitutional laws that affect farmers and ranchers.

  For example: The Horse Protection Act, passed by Congress and signed into law, makes it illegal to use painful devices to enhance a horse's gait in the show ring. Another example is the city and state laws that regulate dairy products.

- Judges

  Opinions from judges are put on record. They are used in future court cases by other judges to establish precedents. These precedents may become common-law (Fig. 5).

Fig. 5 — The Law Is Constantly Reinterpreted

- Administrative rules

  These are passed by government regulatory bodies. The courts and people in administrative positions interpret them and give them strength.

  For example: The Internal Revenue Service develops interpretations of income tax laws. Some of them apply especially to farmers. They are published in the Farmers Tax Guide.

WHERE TO FIND LAWS

You have a responsibility to know the law. You must know where to find the laws that are in force and how they have been interpreted (Fig. 6). Here are some places to look:

- Attorneys
- Law books in your local library and bookstores
- Statutes
- Articles in newspapers and magazines
- Governmental agencies
- Federal, state, county and city officials
- Reports and fact sheets

Examples include the Cooperative Extension Service, Doanes Agricultural Report, KiplingerAgricultural Letter, ProFarmer, and I.R.S. Publications.

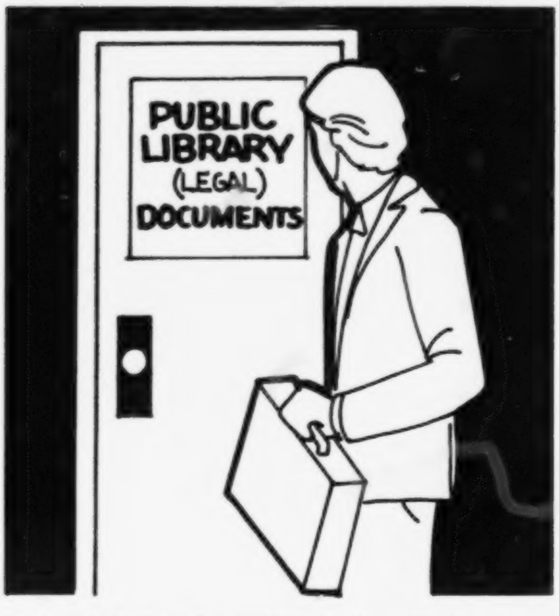


Fig. 6 — It Is Your Responsibility To Know The Law

WRITTEN VERSUS ORAL AGREEMENT

Farmers and ranchers have traditionally relied on the oral agreement and a handshake to "close a deal." In most cases a handshake is fine, and an honorable farmer or rancher will live up to their part of the bargain.

The oral agreement and the handshake can be a problem if the situation must be reconstructed later to settle a disagreement. Oral agreements are particularly a problem if the transaction was done years before. If one of the parties should die before performance and payment under the contract, it is difficult to verify the agreement (Fig. 7). Statutes sometimes require that certain types of contracts be written in order to be enforceable in court.

These difficulties are obvious to a legal mind. What is perhaps less obvious is just what an agreement must have to be a contract.

Fig. 7 — Death Confuses An Oral Agreement

WHAT IS A CONTRACT?

A contract is a legally enforceable arrangement or agreement between two or more parties.

TYPES OF CONTRACTS

Contracts are of two types:

- Expressed — Parties state the term of the contract orally or in writing.
- Inferred — The actions or conduct of the parties indicate an intention to contract.

THE ELEMENTS OF A CONTRACT

Under most state laws, four elements are essential to have an enforceable contract (Fig. 8):

- There are two or more legal parties. The parties must have the legal capacity to act. They must be mentally competent. They must be of legal age under the state law.
- Offer and acceptance. This is evidence that all parties intend to be bound by the agreement. This usually takes the form of an offer or proposal by one party which is accepted by the other party or parties.
- Sufficient consideration. This is usually the promise of each party to fulfill the contract. Consideration may be money, goods, or a promise for a promise. Contracts which lack consideration may not be enforceable.
- They must not offend public policy or morals. Contracts are not enforceable if they are for unlawful or immoral acts.

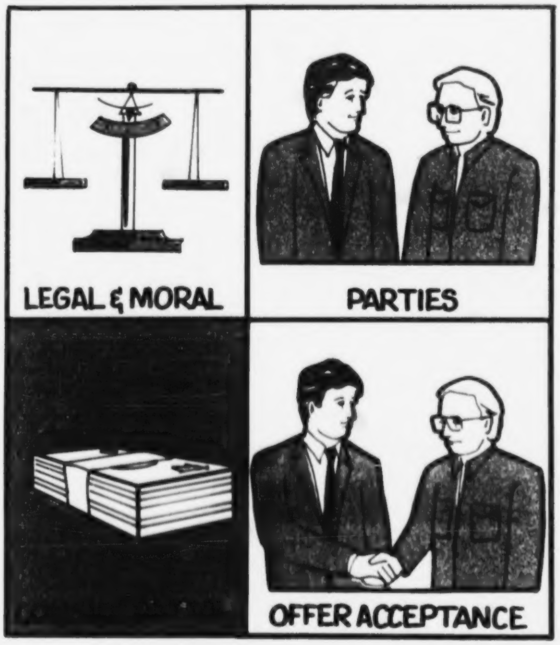


Fig. 8 — A Contract Must Have Four Elements

STATUTE OF FRAUDS

There is a law called the Statute of Fraud that requires certain arrangements or agreements to be in writing to be enforceable.

For example, when Ann's parents sell their house, they sign a real estate contract with the real estate broker. This is called a listing. The listing spells out exactly what they are contracting to do.

The following kinds of contracts usually must be in writing:

- Every agreement, promise, or contract to pay commission for the sale of real estate (Fig. 9).
- Contracts for more than one year.
- Promises to answer for debt, default, or misdoing of another person.
- Agreements, promises or undertakings made upon the consideration of marriage, except the mutual promises to marry.
- A promise of an executor or administrator to pay debts of the deceased out of their own property.
- Contracts for the sale of goods above a certain value unless a portion of the price is paid or a part of the goods delivered. In some states there is no dollar agreement. In others, the required value of the goods varies from $30 to $500.
- Land leases.

Fig. 9 — The Statute Of Frauds Requires That Certain Contracts Be Written

Fig. 10 — Failure To Comply With The Terms Of A Contract Is A Breach Of Contract

BREACH OF CONTRACT

Failure to comply with the terms of a contract is known as a breach of contract (Fig. 10). In the event of a breach of contract, the injured party may:

- Request completion or payment of compensation (damages).
- Be entitled to specific performance of the contract. Specific performance is when the court requires the other party to carry out the contract.
- Agree in advance to the amount of damages to be paid if the contract is breached. This is called liquidated damages.
- Request that the contract be canceled (recission) and that whatever has already been provided be returned (restitution).

Fig. 11 — There Is A Risk Of Nonpayment Until You Have The Cash In Hand

RISK OF NONPAYMENT

The sale of farm commodities is a contract. In every sale there is a risk of nonpayment.

Payment for the sale of farm commodities is not necessarily guaranteed. Don't take payment for granted. There is no law that completely eliminates the risk that farmers and ranchers take when they deliver their commodities to dealers, warehousemen, and buyers (Fig. 11).

Risk of nonpayment arises in at least three common situations:

- Where crops or livestock are delivered and sold, but payment is not received.
- Where harvested crops or livestock are contracted for later delivery.
- Where harvested crops are delivered for storage only.

In each instance, the producer has handed over or contracted to hand over their commodity before payment. The producer shares in the risk that the buyer may go bankrupt before the payment is made.

REDUCING THE RISK

Laws help reduce the risk of nonpayment. In the case of livestock, the Packers and Stockyards Act helps protect the farmer or rancher. In the case of crops, state and federal licensing laws help reduce risk. You can still lose your commodity and money.

For example, federal regulations under the Packer and Stockyards Act require livestock buyers to pay producers by the close of the next business day after delivery. The regulation is of little help if you accept a check drawn on a distant bank, or allow a buyer to defer payment, or otherwise fail to demand immediate payment upon delivery.

Recently, several states passed legislation setting new bonding requirements for livestock buyers. State and federal agencies with their inspections and regulations can reduce the risk that you have when you deal with buyers of farm commodities. You must get your payment when you deliver. No one can do it for you (Fig. 12).

Fig. 12 — Reduce Risk. Get Paid When You Deliver.

DELIVERY WITHOUT PAYMENT

Get your hands on the cash immediately. Checks are not cash payment (Fig. 13). You don't have the cash until the buyer's check clears their bank and the amount is credited to your account in your bank.

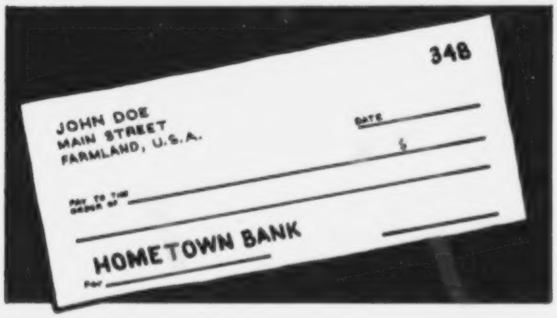


Fig. 13 — Checks Are Not Cash

FLOAT

By using distant banks buyers have the use of your money interest free while checks are in transit (Fig. 14). This is called a "float." A locally drawn check might clear the same day, but by using a distant bank, the buyer can issue checks against funds that do not exist. They count on having money on deposit at the time the checks clear. Through the use of this "float" a company can operate on a substantial amount of interest free money.

Don Bennett of Waco, Texas sold cattle to a buyer from Detroit. The buyer paid with a check drawn on a bank in Detroit. The check never cleared. By the time it got to Detroit the buyer was out of business. Don gave away his cattle. The check had too much FLOAT time. An attorney Don knows advised him to insist on a certified check, cash, or at least a check from a local bank for payment on his next sale.

Depending on the distance to the bank, checks can "float" for a week or more. The longer it takes for the check to clear, the more time the buyer controls your commodity and your cash.

Fig. 14 — Avoid Checks On Distant Banks

FORWARD CONTRACT

As a general rule, if you sign a forward contract, you are obligated to deliver the kind, quality, and amount of livestock or grain contracted within the time specified. In return, the contract buyer is obligated to pay the price agreed upon. You may be legally entitled to payment, but this is no guarantee that the buyer will not become insolvent. The buyer may take your commodity, use it, go bankrupt, and never pay you (Fig. 15).

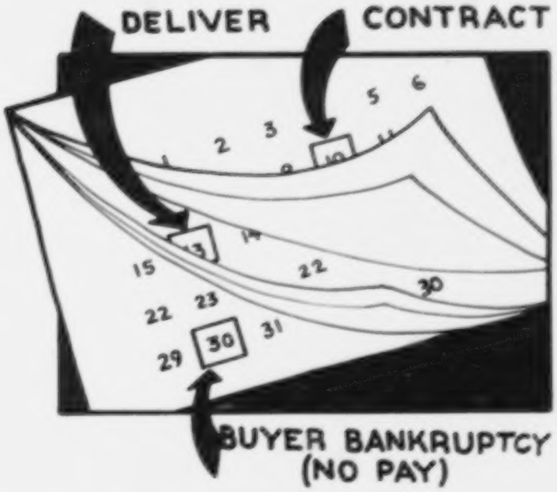


Fig. 15 — There Is A Bankruptcy Risk In A Forward Contract

Davis Meat Packing Company declares bankruptcy. The court that handles the bankruptcy forces Tom Mann to deliver cattle that he had forward contracted. The settlement works out in bankruptcy court to $.30 on the dollar. Tom gets 30 percent of the money that he forward priced his cattle for.

To make matters worse, he owes some bills to Davis Meat Packing. The court makes him pay his bills "in full" before he gets his $.30 on the dollar. If you owe a bill to a bankrupt firm, commodities contracted cannot be used to offset the bill.

The bankruptcy law requires the court to collect all bills due and apply the proceeds to outstanding obligations. Then, they can pay Tom Myers. Tom had to wait until the bankruptcy case was settled before he received his money.

If the market price falls below the contract price, the trustees in bankrupty may refuse delivery under the contract. This would leave you with your livestock or grain, but without the benefit of the favorable price that you contract for. You can assert your claim for the lost profits, but with the buyer in bankruptcy, your chances for recovery are not good.

STORING CROPS

Ralph Martin takes a load of grain to an elevator for storage. Ralph wants to store the grain until the price goes up. Ralph receives a scale ticket marked "STORAGE" "NO-PRICE" from the elevator (Fig. 16). The elevator has economic problems. When Ralph and some other farmers want their grain, there is none. The elevator sold their grain illegally. Ralph could not prove the value of the grain. He lost his entire grain crop.

Fig. 16 — Always Get A Price On Your Ticket At A Grain Elevator

WAREHOUSE RECEIPTS

If there is a grain shortage, you will have the greatest protection if you have a warehouse receipt that is issued by the grain elevator (Fig. 17). Always get a warehouse receipt and a scale ticket when you store grain. There may not be enough grain on hand to satisfy holders of warehouse receipts. A warehouse receipt gives you the best protection that you can get.

A warehouse receipt proves that you are entitled to the goods that it represents. If the warehouse receipt is negotiable, you can sell it. Warehouse receipts also are good collateral for loans.

Fig. 17 — Always Get A Warehouse Receipt

Fig. 18 — Shield Your Commodities As Though They Are Cash

SAFEGUARDS

Crops and livestock are the same as cash. Shield them as though they are cash (Fig. 18). Consider the following safeguards:

- Deal only with a licensed warehouseman, broker, or dealer.

- Don't be deceived by the size or appearance of the company that you deal with. Even though companies are inspected, many changes can take place between inspections.

- Investigate the financial condition of the buyer before forward contracting. If you deal only with a local dealer whose performance depends in turn upon the performance of another buyer, you may want to research the buyer's abilities also.

- Demand a scale ticket marked "sold" or "storage" with each load of grain that you deliver.

- Demand payment immediately by a check drawn on a nearby bank when the delivery is completed. If you deliver grain over a lengthy harvest season, get a partial payment prior to the completion of the delivery.

- Get a warehouse receipt immediately if you store crops.

- Be on the lookout for practices that indicate financial instability. Report them to the appropriate licensing agency.

Fig. 19 — 1-1/2 Million Americans Are Involved With Leased Land Every Year

LEASES AND LEASING

Leases are the legal agreements that landowners and farm operators use to do business. About 1.5 million landowners and farmers in the U.S. deal with leasing each year (Fig. 19).

A lease may be oral or written, long or short, adapted or not adapted, and as a written instrument it may be valid or invalid. Well written farm leases can lead to better understanding and closer cooperation between landowners and tenants. There are several kinds of leases that you can use.

KINDS OF FARM LEASES

The most common kinds of farm leases are:

- Cash

- Share

- Manager operator or partnership (sometimes called profit sharing)

CASH LEASE

A cash lease is what Bob Sallee uses when he leases grazing land for his cattle. He and the landowner set a fixed price per acre when they make their deal (Fig. 20). This is the most common type of cash lease. This is a good lease for:

- Any small farm.
- A landlord that lives a distance away from the farm.
- A tenant like Bob who has adequate livestock, equipment, and working capital.

Fig. 20 — A Cash Lease Is The Most Common Type

A cash lease is good for livestock grazing because it is simple, and reduces the chance of controversy. Bob can feed his cattle from what the farm produces.

The landlord may prefer a cash lease because there is:

- Less risk and guaranteed income.
- Fixed rent.
- Less supervision by the landlord.

On the other hand, a cash lease may not always be best from the standpoint of the landlord because:

- It generally provides lower income.
- It gives the landlord less control of the land.
- It is difficult to collect rent if crops fail.

The tenant may prefer a cash lease because:

- It will provide more profit if the enterprises are successful.
- The tenant can expand the size of the business and lower fixed costs.

Fig. 21 — A Livestock Share Lease Doesn't Require An Investment In Equipment For The Person Leasing The Land

LIVESTOCK SHARE LEASE

Susan Hill hasn't built up the equipment, and working capital to raise livestock that Bob Sallee has. She prefers a Livestock Share Lease (Fig. 21).

Susan can make this kind of lease because she has a friendly relationship with her landlord. Also the landlord lives on the property and does most of the management for her. She learns a lot in the process besides getting a share of the returns.

Landlords like the livestock share lease because:

- They retain an active interest in management.
- It encourages more efficient use of resources.
- It generally makes more returns than other leases:
- Low quality crops can be used effectively.

Tenants like a livestock share lease because:

- The risk is less because the payment is based on the livestock enterprise production.
- They can gain experience from the guidance of a successful owner.
- The landlord is more willing to make improvements
- It requires less of the tenant's capital.

CROP SHARE LEASE

Ken Bartlett leases crop land in Northern Missouri. Ken is a new farmer, and he doesn't have a lot of capital to invest. He signs a Crop Share Lease with an older landowner who contributes some management knowledge. The landowner also pays for a percentage of the seed, fertilizer, and chemicals (Fig. 22). Ken pays a percentage of the harvested crop to the landowner. This is the most common lease arrangement in the United States.

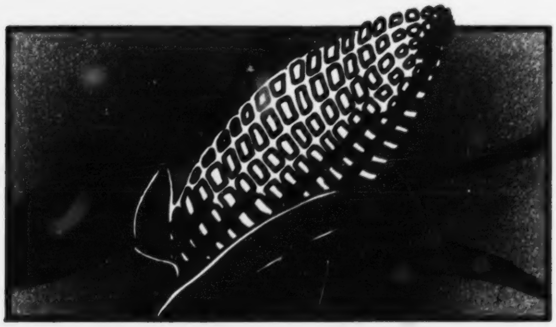


Fig. 22 — A Crop Share Lease Doesn't Require Much Capital For The Person Leasing The Land

Crop share leases are adapted to:

- Areas where land is good and nearly all tillable.
- There are young tenants and new farmers with less capital.

The landlord likes a crop share lease because:

- There is more opportunity for supervision of the land than with a cash lease. The landlord can help manage the control of erosion, fertilizer application rates, and make sure that the land is not abused.
- There is more probability that the rental may come closer to the value of the land than other leases.

The tenant likes a crop share lease because:

- It requires less capital than a cash lease.
- The landlord is more inclined to improve the farm and increase productivity.
- There is less risk exposure on cash outlays if the crop fails.
- The landlord shares the risk as well as the returns.

MANAGER OPERATOR OR PARTNERSHIP LEASES

The manager operator or partnership lease is an agreement where the landowner and tenant specify in advance what each will furnish, and how the returns will be divided. The landowner usually furnishes all the capital, while the manager furnishes the labor. Normally, the manager shares in returns on the basis of a fixed percentage — usually 35 to 40 percent. This is sometimes called a profit sharing lease.

Terry Hirt and his son Mike have a Manager Operator lease (Fig. 23). This is common among family members in the United States. Mike (the tenant) provides all the work and does the everyday decision making. His father, Terry, provides the long range management, the capital, the land, the livestock and the equipment. They share the profits on a 60/40 basis at the end of the year.

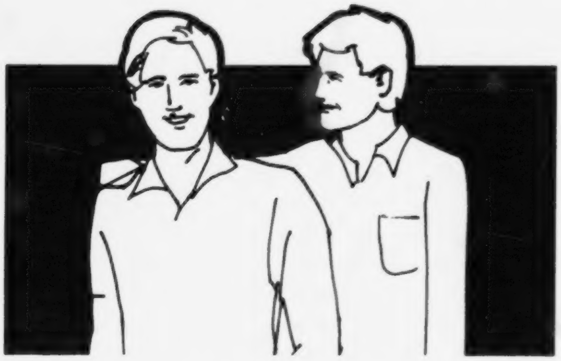


Fig. 23 — Partnership Leases Are Common Among Family Members

Some basic suggestions for this type of lease are:

- Separate living quarters for each of the families.
- A good set of records.
- A farm business large enough to support two families.
- Ability to get along together.
- Revision of the agreement from time to time.

After a few years under this type of lease, the tenant usually prefers, and is able, to switch to a regular crop share, livestock share, or cash lease. The tenant may be able to make more returns in these situations. Some may become full partnership agreements.

Except for a parent-child agreement, this type of lease is normally not too satisfactory and should be avoided because:

- Disputes may arise over the system of accounting (records).
- The landowner bears most of the risk because of their asset exposure. The tenant on the other hand has only labor at stake.

LEASING MACHINERY

Ken Bartlett, the young farmer that we met earlier who leases land, also leases a combine to harvest (Fig. 24). Ken feels that he can get more control over costs by harvesting his own grain than having it custom harvested.

Ken signs a **Financial Lease** for a combine. Under the lease Ken must use the machine for at least one harvest and can return it. After the life of the lease then the option of taking ownership exists. Ken must:

- Make an annual payment for the machine.
- Make repairs.
- Do the maintenance.
- Provide shelter for the machine.

Fig. 24 — A Machine Lease Is For A Specific Use

Ken could have made another deal. He could have signed an **Operating Lease (Fig. 25).** Under this lease he would have had to keep the machine for more than one year. Ken would not have been responsible to do repairs, except for negligence, but the savings were not worth having to keep the machine and be locked into the payments.

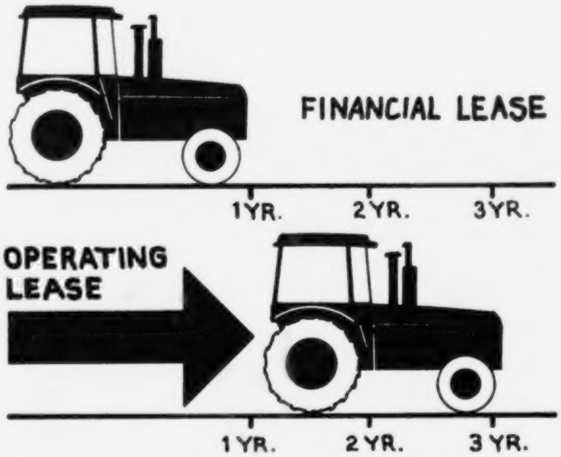


Fig. 25 — A Financial Lease Can Be For 1 year; An Operating Lease Is For An Extended Period

INSURANCE FOR THE FARMER OR RANCHER

Without insurance, few of us could bear the risk of fire, accidents, lawsuits, and a death in the family. When Ken Bartlett's leased combine burns in the field, Ken is glad that he had insurance to pay off the lease company (Fig. 26). Ken looks at insurance this way:

When he takes out an insurance policy he is paying a professional risk taker (the insurance company) a small but regular sum of money (the premium) to assume the financial burden in case of the unexpected.

Fig. 26 — Fire Insurance Helps Reduce Risk

WHAT ARE THE USES OF INSURANCE?

There are several uses for insurance:

- It protects you and your family financially and lessens the hardship of unexpected economic loss.

  Examples: Damage or loss from fire, flood, tornado, lawsuits.

- It meets your obligation to others who might suffer injury or loss because of something that you did.

  Example: It pays for damage to another's car if you run a stop sign and hit them.

- It makes it possible for you to take certain risks that you otherwise could not take.

  Example: You might want to buy a $100,000 farm but have only the $20,000 down payment. You might be able to borrow the remaining $80,000 on the condition that you take out a term life insurance policy that will pay the lending agency the remaining balance on the loan if you die. Your family will not be financially devastated.

Fig. 27 — Insurance Helps To Financially Protect Your Business And Family

COMMON KINDS OF INSURANCE COVERAGE

The common kinds of insurance coverage include (Fig. 27):

- **Life insurance.** This helps protect your family against loss of income because of your death.
- **Accident and health insurance**. This helps protect you against the expenses arising from illness and accident and against loss of income because of illness and accident.
- **Property insurance**. This gives you protection against financial loss if property is damaged, destroyed, or stolen.
- **Liability insurance.** This helps protect against lawsuits if you cause personal injury or property damage.

POINTS TO REMEMBER WHEN BUYING INSURANCE

When you buy insurance remember:

- Insure against those losses that may lead to financial disaster.
- Insure the irreplaceable or the most necessary property first.
- Don't insure anything that you can easily afford to replace yourself.
- Be sure the coverage is adequate. Property such as your house may go up in value. Insurance coverage that was bought five years ago may not be adequate to replace your house at today's costs.
- Buy insurance that provides coverage for situations in which you are likely to have a claim (Fig. 28).

  Examples: Flood insurance if you live in a low-lying area near water; liability insurance if you employ people and own land; all-risk crop insurance if you are in an area where it often hails during harvest.

Fig. 28 — Buy Only The Insurance That You Need

LEGAL LIABILITIES OF FARMERS AND RANCHERS

As a farmer or rancher, you must realize that laws can affect your livelihood more than they do the average citizen. This is especially true regarding liability. If a court judgment for damages is awarded, the negligent party must pay the damages. If they don't, their property may be seized to pay the sum awarded the injured party (Fig. 29).

Farmers and ranchers are especially vulnerable because most of their net worth is invested in agricultural land. If a farmer does not have the money or sufficient liability insurance coverage, they may lose their entire farm or ranch.

Liability insurance does not eliminate loss, but it does reduce risk by substituting a small, regular payment (premium) for a large uncertain payment.

Fig. 29 — Farmers And Ranchers Are Especially Vulnerable To Liability Judgements

NEGLIGENCE

In most cases liability depends upon negligence. The fact that someone is injured on a farmer or rancher's land does not make the farmer or rancher liable. Before the farmer or rancher can be held liable, there must be negligent action or lack of action on their part. This also is true for an employee that is engaged in work on the farm or ranch.

Although courts have given many definitions for negligence, it is generally considered to be the omission by an individual to do something which a "responsible person" would do under similar circumstances (Fig. 30). Another definition is failure to use reasonable care under the circumstances.

Examples of negligence may include the failure to repair a hole in the barn floor, or keeping fences in such poor repair that livestock can roam free.

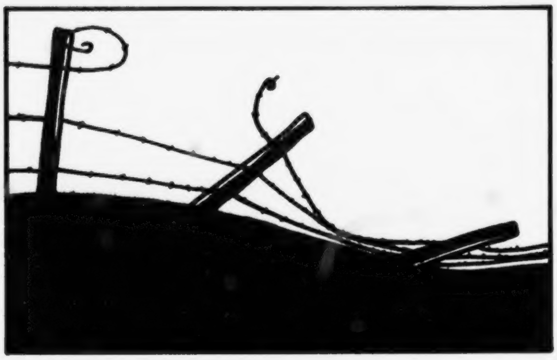


Fig. 30 — Negligence Is Irresponsibility

LEGAL LIABILITIES WITH RESPECT TO LAND

The landowner or occupier of land (tenant) owes one kind of duty toward their adjacent neighbors, and a different set of duties toward people or property actually on their land.

DUTIES TOWARD PEOPLE OR PROPERTY ADJACENT TO YOUR LAND

For the property or person next to their land, the farmer or rancher must exercise reasonable care to prevent injury or property damage to a neighbor. For instance, Sue Johnson, made an excavation near her property line which caused her neighbor's land to cave in. She may be liable to her neighbor for damages. Another example is a coal company that tunnels under farmland and causes it to sink. The owner of the land may be entitled to damages for the loss of lateral support. Lateral support is the right to have land supported by the land which lies beside it.

If you have a defective building and a strong wind blows some of the pieces into your neighbor's crop land, then you may be liable for damages. You must keep your own buildings in good repair. You should repair or tear down the building before the incident (Fig. 31).

Fig. 31 — You Are Responsible For Your Own Property

DUTIES TOWARD PEOPLE ON THE LAND

A farmer or rancher's duties toward persons on their land can become complicated. These people may be divided into three groups:

- Invitees
- Licensees
- Trespassers

The courts have frequently had difficulty deciding which of these fits specific people coming onto farm property.

Invitees

A person who is on your farm with your consent and for your benefit, or for your mutual benefit, is an invitee or business visitor. Examples of invitees are someone who comes on your farm to buy garden vegetables and eggs, or a hunter who pays a fee to hunt.

You have responsibilities to an invitee (Fig. 32):

- First, you have a duty to warn invitees of known hidden dangers. You are liable for any injuries that they may suffer from these known hidden dangers.
- Second, you have a duty to inspect your property for hidden dangers.

Fig. 32 — You Must Inspect Your Property And Warn Invitees Of Potential Hazards

For example, Brad Simpson is a feed dealer's employee. He delivers a load of feed and falls through a rotten board on the steps leading to the feed room in your barn and is injured. As a business visitor, he has implied consent to be on your property. You receive some benefit from his presence because he delivers your feed. You are liable for his injury unless you had warned him that the step was rotten. On the other hand, if Brad knew about the dangerous step, and you could prove it, you would probably not be held liable.

You also probably wouldn't be held liable if the defective step is not discovered when you make a reasonable inspection of the premises.

Other examples of invitees are people who deliver supplies, salesmen, the postman, repairmen, independent contractors and their employees, and prospective buyers. A social guest, though invited, is not considered an invitee.

Licensees

Someone who comes onto your land solely for their own pleasure, benefit, or convenience is a licensee. This visitor is tolerated rather than invited. A licensee has a legal duty to be on the lookout. If they are careless in this respect, then you are not responsible for any resulting injury. Your duty to the licensee is to warn them of any hidden dangers that you are aware of. You have no obligation to make the land safe for the licensee, nor must you inspect the property to locate dangers (Fig. 33).

Someone who has permission to hunt but does not pay a fee to do so is a licensee. So is anyone who does not enter the land at regular times, such as social guests. Someone who initially comes on the property as an invitee may become a licensee while still on the land. For example, Brad the feed dealer's employee, who came to deliver the feed, becomes a licensee if he uses your telephone to make a private call. For the time that he is going to and returning from the phone, he becomes a licensee because he isn't doing what he is invited on your land to do.

Fig. 33 — Your Duty Is To Warn Licensees Of Any Dangers That You Know

Trespassers

Someone who is neither invited nor desired on your land is a trespasser. Because the person is a trespasser, you are only liable for personal injuries if you intentionally inflict them. You do not need to make the land safe for a trespasser. You have no duty to warn a trespasser of hidden dangers or search for dangers for the trespasser (Fig. 34).

You may use reasonable force to remove a trespasser from your property. Unless your life or the safety of your family is threatened, you may not use a deadly force to remove a trespasser. Deadly force includes any type of force that could cause death or serious bodily injury.

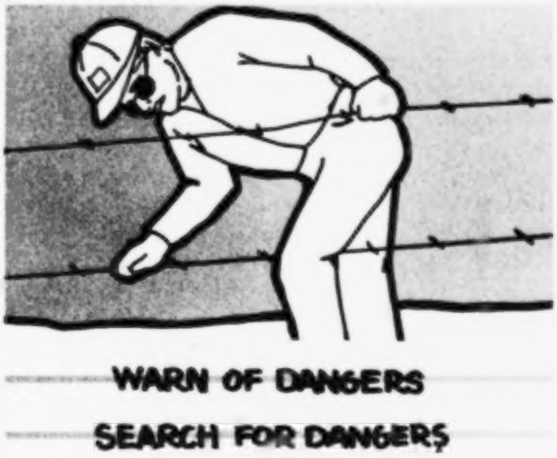


Fig. 34 — You Have No Responsibility To Protect The Safety Of Trespassers

DETERMINING IF A VISITOR IS A LICENSEE OR A TRESPASSER

Visitors may have either your expressed or your implied consent to be on your land.

With expressed permission, you actually tell the visitor, verbally or in writing, that they have your consent to be on your land. If you give expressed permission, the visitor cannot be a trespasser unless you retract that permission. Also, if you see someone on your farm without your permission, and you do not tell them to leave then they are not a trespasser. They have your implied permission to be there. If they are injured by a hidden danger that you know of, you may be liable for personal injuries. You are liable even though you gave no expressed permission for them to be on your land.

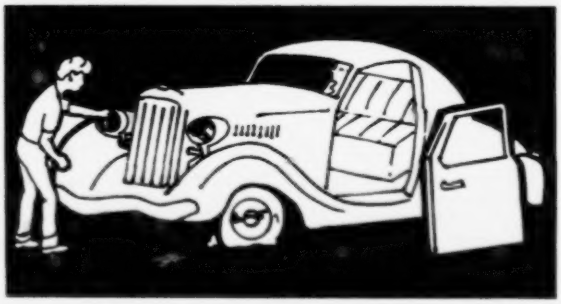


Fig. 35 — An Attractive Nuisance Invites Injury And Liability

DOCTRINE OF ATTRACTIVE NUISANCE

Your responsibility to children is greater than your responsibility to adults. The doctrine of attractive nuisance charges you with a greater duty to prevent injury to children. If you negligently keep an object or condition on your land that is attractive and dangerous to children, you will be liable if a child is injured by that object or condition (Fig. 35). For this doctrine to apply:

- The landowner must know that children trespass where the object or condition is located.

Attractive nuisances include discs, plows, old cars, combines, old tractors, buildings under construction, and piles of lumber, posts, and old refrigerators.

If children can see the object it may arouse their childish curiosity and attract them. If the children are injured on the object that attracted them, you are liable for their injuries.

Usually the doctrine of attractive nuisance does not apply to natural conditions on your land such as natural ponds. However, the law has different views as to whether the doctrine applies to constructed ponds.

Fig. 36 — Signs Do Not Relieve You Of All Responsibility

NO TRESPASSING SIGNS

Mick Davenport tacked up no trespassing signs around his recently constructed pond (Fig. 36). Mick thought that they would keep out unwanted visitors. They probably did keep out a few.

Mick also felt that the signs would relieve him of responsibility if someone did trespass. As far as adults are concerned, the signs are evidence that he doesn't give permission to enter. What about someone who can't read or doesn't see the signs? Or what about someone who doesn't really feel the signs apply to them? Courts have been known to rule in favor of a trespasser under these special circumstance. If children are involved signs seldom protect the owner against liability.

LIABILITIES OF EMPLOYERS

If you hire people to work for you, you may be liable for the acts of the employees as well as for injuries to them. The extent of a farmer or rancher's liability depends on the control that they have over the employee and the legal classification of the person employed. We will discuss the three legal classifications:

- Employees
- Agents
- Independent contractors

EMPLOYEES

If you, as an employer, direct and control a person's tasks, that person is an employee (Fig. 37). A general farmhand, with little training and whose work is supervised by you is an employee.

Of the three legal classifications, an employer has the greatest degree of control over the employee, and the greatest liability for their actions.

For example, if your employee throws a rock at a steer and injures it while trying to drive a neighbor's cattle out of your wheat field, you may be liable to reimburse your neighbor for the steer.

You might fire the employee out of anger, or require the employee to reimburse you, but you would be liable to your neighbor.

Fig. 37 — An Employee's Tasks Are Directed And Controlled

INJURIES TO EMPLOYEES

If an employee is injured on the job, they may try to sue you for compensation. They will try to prove a connection between the injury received and the working conditions. You can prevent successful suits by initially meeting your responsibilities as an employer.

For example, make sure that shields are on PTOs so that employees can't get caught in them (Fig. 38). Train your employee thoroughly. Teach the employee how to correctly operate your machinery. Explain that it is necessary to keep all machine guard shields in place while operating your machinery.

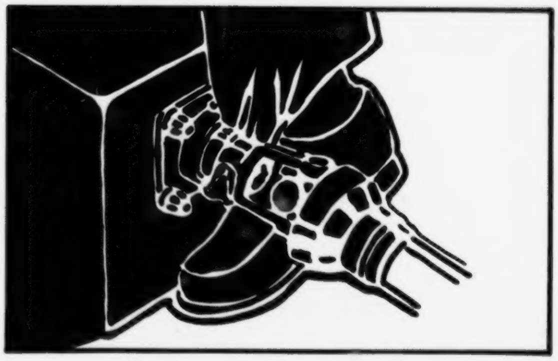


Fig. 38 — An Employer Must Make Sure That Proper Guarding Is In Place At All Times On Such Things As PTO's

As an employer, your responsibilities to your employees also include:

- Provide a safe place to work.
- Provide reasonably safe tools, machinery, and equipment.
- Warn and instruct the employee of dangers which they could not reasonably be expected to discover.
- Provide competent fellow employees.
- Make reasonable rules for the conduct of the employee while at work.

Failure to face these responsibilities could wipe out your business.

WORKMEN'S COMPENSATION INSURANCE

In most states, farm and ranch employees are exempted from workmen's compensation. There is a good reason for the exemption in agriculture. Workmen's compensation automatically makes the employer liable for most injuries suffered by an employee in the course of employment, whether the employer is negligent or not. In some situations, the employee may be negligent. This plan assumes that the employer is always responsible for the injury. Also, an employee covered by workmen's compensation may not sue the employer for negligence. The employee is bound to take the amount established in the official schedule. The established amount may not equal the disability of the employee.

Farm and ranch employers may elect to come under workmen's compensation statutes by purchasing a standard workmen's compensation insurance policy.

AGENTS

An agent has the authority to either transact business or manage the affairs of the employer. The employer has a lesser degree of control over an agent than an employee. An example of an agent is a hired farm or ranch manager.

You, as the employer, are responsible for your agent's acts while the employee is doing your work. The authority may be expressed or apparent. For example, Dick Davenport gives his ranch foreman, Mike Henson, $100.00 to buy Vet supplies (Fig. 39).

Mike keeps the money and charges the supplies to Dick's account. In this case, the veterinarian called Dick, and they settled. The veterinarian could have sued Dick for the bill if Dick hadn't paid.

Fig. 39 — Agents Have The Authority To Buy And Sell For Their Employer

INDEPENDENT CONTRACTOR

An independent contractor is a person or organization performing a job without control from the employer. The employer only determines the results (Fig. 40). You, as an employer, have no control over the method used to do the job. Examples of independent contractors are:

- A custom harvester
- A crop duster
- A well driller

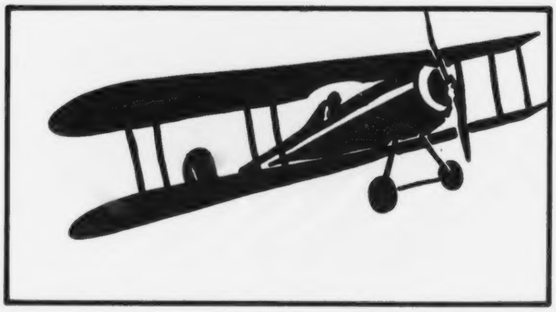


Fig. 40 — An Independent Contractor Is Hired To Do A Job

For example, Floyd Ernst hires Hemmingway Crop Dusting to sulphur his table grapes. Joe Hemmingway usually drives out to a prospective site with his wife Lorraine, sets stakes as markers, checks for hazards, and evaluates possible hazards. Then, when Joe flys on the material, Lorraine stands on the ground with a flag to mark each pass. This time, however, Floyd interferes. He insists on handling the flags. In the process Joe is misdirected in the dusting and sulfur drifts onto a nearby pasture. The sulfur kills several calves. Floyd is liable for the cost of the calves. He misdirects an independent contractor and interferes with the contractor's established work procedure.

As a general rule, the employer is not responsible for the negligent acts of an independent contractor. But there are exceptions:

- Negligence in selecting a competent contractor
- Furnishing a contractor with faulty plans or specifications
- Interfering with the contractor
- Hiring an independent contractor to perform a task which is inherently dangerous (example: aerial application of pesticides)

LEGAL ASPECTS OF FENCING

Most states have laws that govern boundary fences. In some states, the fencing regulations are left largely to local government. Although laws vary widely from state to state and are subject to change, the following conditions usually prevail:

- INSIDE FENCES — No stipulations are usually made for materials used on inside fences.

- BOUNDARY FENCES — Some state laws require landowners to enclose their land with a fence tight enough and strong enough to turn livestock (Fig. 41).

Fig. 41 — Boundry Fence Laws Vary From State To State

- RESPONSIBILITY FOR DIVISION FENCES— People build fences between their property. Each owner usually pays half. This is usually the half on their right-hand side as they stand at the fence division line on their own property.

- CHECK STATE LAWS — If you build a fence, check the laws first. It is expensive to correct your mistake.

LIVESTOCK AND FENCES

Although state laws vary, there are some common laws that affect the use of livestock fences:

- In most states, a livestock owner who maintains good fences, is not liable for damage that is caused by livestock (Fig. 42). In this case, the owner must not be aware that the animals are in the habit of breaking out, and must make an immediate attempt to retake them when they do break out.

Fig. 42 — Keep Fences Maintained

- When animals break through an adjoining owner's part of a division fence, and the fence is not in good repair or is not legally sufficient, the owner of the animals cannot be held liable for their trespass.

- An owner of trespassing animals may be held liable if:

  - the owner's animals are in the habit of breaking out, regardless of the condition of the fence.

  - the owner's fences are defective or insufficient.

  - negligence such as leaving the gate open causes the trespass.

  - animals that are driven along a road get out of control and enter adjoining fields, even though the road is not fenced.

Bill Burris faces a liability action. He accidentally left his ranch gate open one night. Thirty head of Angus strayed. They grazed down the road, got spooked by a coyote and proceeded to destroy a tomato field that is leased by Jean Smith. His negligence makes him liable to Jean for the value of her tomatoes.

ANIMALS ON HIGHWAYS

Sometimes farm animals stray out of their pasture onto roads and highways. If a driver on the road runs into a loose animal and is injured, or the vehicle is damaged, they may try to collect damages from the owner of the animal. The animal owner may try to collect from the driver. Although state laws vary widely, the following general rules are covered in this next case study.

Betty Green has a herd of Herefords that are well tempered and have never broken out. Betty keeps her fences maintained and checks her herd regularly. She is careful. One night someone driving too fast on the road that runs along Betty's North fence line drives their car into the fence, knocks down a couple of posts and causes a gaping hole in the fence before it comes to a stop. The driver, a stranger unaccustomed to cattle country, drives off.

A car hits one of Betty's steers that wanders through the fence break. There is considerable damage to the car. The motorist is not injured, but the steer died. Who is responsible for the cost of the car repair and the cost of the steer (Fig. 43)?

Betty Green is not responsible. She has no reason to believe that there is a break in her fence. Her cattle has no history of wandering. She has a reputation for checking her fences and cattle frequently. The motorist who hit the steer may not be liable either. The motorist had no way of knowing that there was a hazard on the road. However, some states may call the motorist liable because the motorist should try to reasonably avoid obstacles in the road. The point is, the cattle rancher, Betty, is not responsible for the car damages because she did her job correctly. In this case Betty's insurance company, and the driver's insurance company paid for the cost of the accident under their "no fault" clause.

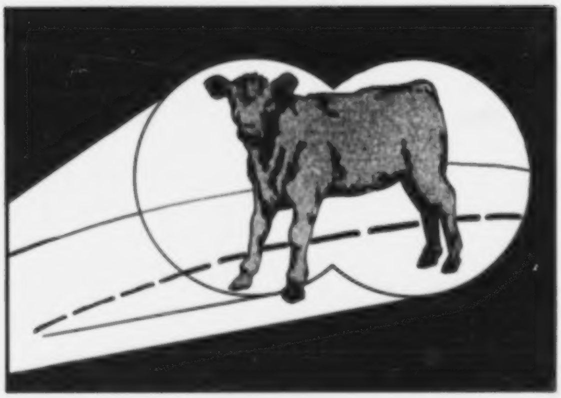


Fig. 43 — Who Is Responsible?

Summary of fence laws:

- If a farmer or rancher is negligent in maintaining their fences and their animals escape, then they can be held liable for damages resulting to people using the highway.
- If a farmer or rancher maintains fences in good repair, but has animals that are in the habit of breaking out, the farmer or rancher may be held liable for damages caused by the animals.
- The owner may be held liable for damages caused if the owner knows the animals were out and made no reasonable effort to get them back in. This happens even if the fence is in good repair and the animals are not in the habit of breaking out.
- If animals are driven on a highway, and if the owner is careful, then the owner is not liable for damages. Stock crossing signs usually increase the caution exercised by the motorists.

HANDLING STRAYS

Strays (or estrays) are domestic animals not including dogs and cats, of unknown ownership that are running loose. Laws have been made to provide for them:

- Either landowners or local authorities may confine such animals and care for them.
- A reasonable attempt must be made to locate the owner of strays.
- The finder is entitled to make reasonable use of strays while they are in their custody. Example: Milk a cow.
- When the owner comes for a stray, the owner must pay the finder for feed, housing, care, and other costs (Fig. 44).
- If the owner does not claim their stray animal, it either:
  - becomes the property of the finder or
  - must be sold at public auction. A reimbursement is made to the finder for expenses and the balance is put into county funds.

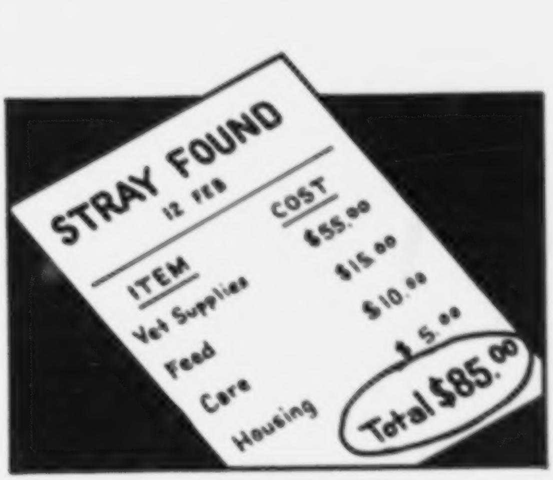


Fig. 44 — An Owner Of A Stray Must Pay The Finder Costs

Fig. 45 — The Owner Is Liable For Vicious Animals

PEOPLE INJURED BY ANIMALS

An owner of animals (Fig. 45) may be held liable for personal injuries caused by them under these circumstances:

- When the owner negligently allows or causes them to commit the injury.
- When the owner is aware that it is a vicious animal, and when the vicious animal inflicts injury upon someone who is not acting negligently.

  Examples include: biting dogs, wild animals such as a bear or lion kept as a pet, boar, bull, horse, rooster or any animal capable of inflicting injury that has a known and vicious nature.

ANIMAL DISEASES

Some animal diseases are so devastating, that no individual farmer or rancher can protect their herds or flocks. There are several regulatory control groups to help stop the spread of disease under the supervision of federal and state organizations. Most states have state veterinarians who direct the livestock sanitary and regulatory programs.

Health requirements governing the interstate movement of livestock are issued by both state and federal animal health agencies. Most requirements prohibit or restrict the movement of animals affected with or exposed to a communicable disease (Fig. 46). Provisions now affect Texas fever in cattle, scabies in cattle, equine infectious anemia in horses, hog cholera, tuberculosis in cattle, brucellosis in cattle, and screw worms.

Where certain animal diseases are involved, the stockman can get financial assistance called indemnity payments through federal and state sources to help eradicate the diseased animal.

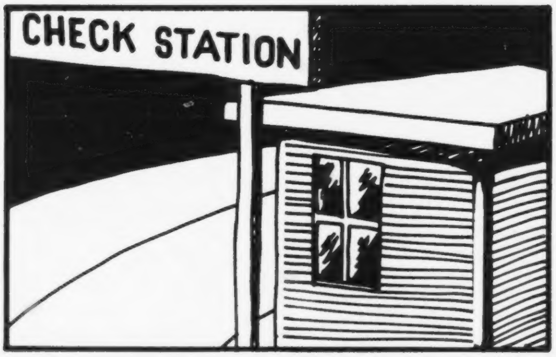


Fig. 46 — The Movement Of Diseased Animals Is Carefully Controlled

BRANDS AND BRAND INSPECTION

In the range country of the western United States, brands are used to tell the ownership of animals. This helps reduce theft (Fig. 47). To meet their needs some states have laws governing the recording and inspection of brands and the transfer of branded animals. Ranchers operating in these states should become thoroughly familiar with the provisions of the brand inspection laws. Unbranded animals are an open invitation to thieves. Without brands, strays are difficult to locate. Law enforcement officers can be of little help unless there is positive animal identification that they can use.

Fig. 47 — Brands Help Reduce Theft Of Animals

LIVESTOCK POLLUTION LAWS AND REGULATIONS

Both open lot and confinement livestock systems come under pollution regulations. Open lots present drainage and runoff problems (Fig. 48).

Confinement systems must be coordinated with the disposal area so pollution will not be created when storage pits are emptied.

Registration of facilities and a permit may be necessary to operate open lots and confinement areas. These are required so that the federal government and the states can monitor livestock wastes and make sure it is properly handled. Since state regulations vary, check the regulations for your state.

Fig. 48 — Confinements And Open Livestock Lots Can Cause Pollution Problems

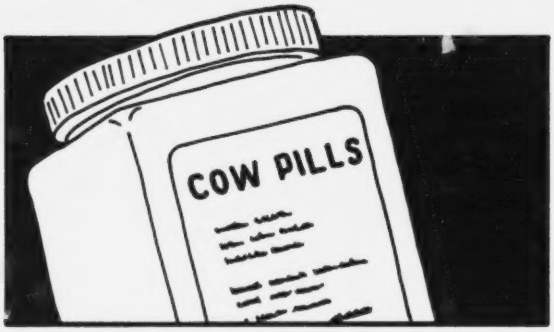


Fig. 49 — The User Is Liable For The Safe Application Of All Drugs And Chemicals

AGRICULTURAL CHEMICAL LAWS AND REGULATIONS

People are concerned over the use of chemicals and drugs for fear of poisoning food.

Chemicals and drugs must be used with discretion, especially those designed to kill a living organism (Fig. 49). Federal regulations now require chemicals and drugs to:

- Be carefully tested through properly designed experiments before use.
- Conform to federal and state laws.
- Be accurately labeled and state the uses for the product.

State regulations vary widely, but most now require some training and certification before a farmer or rancher can use certain dangerous chemicals and drugs. You should check your state's regulations on the use of agriculture chemicals and drugs and your liabilities when using them. Some are capable of killing. Your liabilities could wipe you out if you ruin a water supply or fatally injure someone.

Fig. 50 — Riparian Rights Regulate The Flow Of Water In Streams And Rivers

RIPARIAN RIGHTS

A right is a power, privilege, demand or claim, possessed by a particular person by virtue of law. Every legal right that one person possesses imposes a corresponding legal responsibility on another. A riparian is someone who owns land bordering on a stream. A farmer or rancher who is a riparian has certain rights and responsibilities that they should observe (Fig. 50).

An owner of a stream bank (riparian) has the right to dam a stream or make other uses of it so long as they do not:

- Interfere with the use of the water by downstream owners
- Divert the course of the stream
- Reduce the amount of water unreasonably
- Cause water to back up on the land of those above them

SURFACE WATER

Surface water is treated differently by the law. When it rains, surface water flows down arroyos, draws and gullies that are usually dry.

A landowner may dam, divert, or store surface waters in irregular streams for water conservation livestock use, or soil conservation and improvement. The landowner must not violate any of the common-law rules of drainage.

A common law on damming or impounding water is that anyone who dams or impounds water does so at their own risk. If this action later causes damage to others, they are liable for the damage. This rule usually applies whether the landowner dams up a stream or surface water.

DRAINAGE

A general rule for drainage is that an owner whose land naturally drains across a neighbor below may increase the amount of water flowing from their land by artificial ditches constructed on their land. This can be done if the artificial ditches drain only the natural basin water.

Some states, where much of the land is too flat to adequately drain, have passed laws making the construction of drainage works which cross property lines legal. This is usually accomplished through the formation of drainage districts.

Fig. 51 — Irrigation Laws Differ From State To State

IRRIGATION

Laws regarding irrigation (Fig. 51) vary widely among states. Some general rules include:

- A riparian owner is entitled to reasonable use of water for irrigation if it doesn't harm lower riparian landowners. The courts use many tests to determine how much water a riparian owner may use for irrigation purposes. In the end, each case is determined on the basis of reasonableness.

- You can get the right to take water by contract, license, or by a long and continuous use of the water supply. The right is not confined to flowing water, but may be applied to water in ponds and wells.

- Generally only riparian land in the same watershed as the stream is entitled to water from the stream.

- Livestock comes first. There are some small streams that carry only enough water for normal livestock and domestic purposes. No water can be drawn from these streams for irrigation.

- The right to use a stream for irrigation purposes may be lost if the irrigation channels are abandoned.

- Most states allow the formation of irrigation districts so that land can be irrigated at a uniform rate and without discrimination.

- Many states require permits for water rights to pump water from the ground or stream. Usually records of the amount of water pumped are kept.

- Irrigation water must be kept under control by the landlord or tenant. They are liable for water damages.

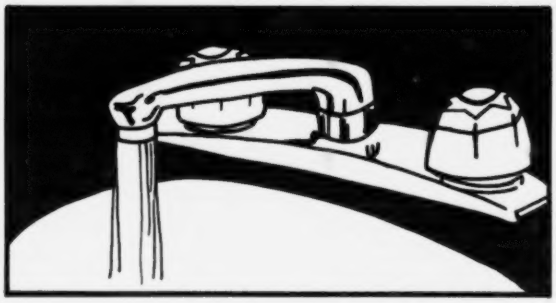


Fig. 52 — Domestic Users May Not Be Required To Get Permits To Appropriate Water

DOMESTIC USE OF WATER

Domestic use means the use of water for:

- Household purposes
- Watering livestock
- Irrigation of land no larger than two acres for growing gardens, orchards and lawns.

As a domestic user you may not be required to get permits to appropriate water (Fig. 52).

ESTATE PLANNING

From a legal standpoint, estate planning is a branch of law that is used to arrange a person's property. It takes into account the laws of wills, taxes, insurance, property, and trusts and carries out a person's wishes for the disposition of property at death (Fig. 53).

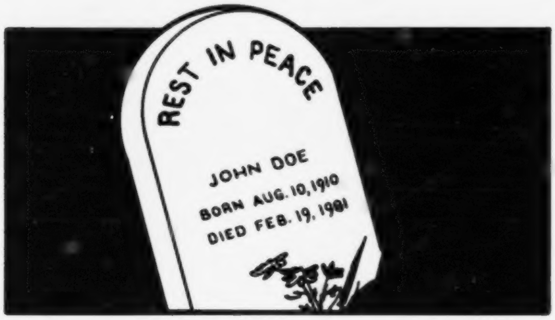


Fig. 53 — The Lack Of Estate Planning Can Result In Serious Management Problems

Lack of planning before a person dies may result in serious farm management, family, and legal problems when the estate is being settled. Problems might include:

- Ill feelings and bitterness among heirs.
- Uncertainty of eventual owners.
- Unequitable treatment of children.
- A farm being sold or split into small, uneconomical units.
- A widow or widower with young children not able to provide adequately for the children under guardianship.

Fig. 54 — An Estate Plan Can Help Prevent A Forced Sale

FACTORS TO CONSIDER IN ESTATE PLANNING

When developing an estate plan consider:

- The objectives for developing a plan.

  Examples: To keep a farm in the family (Fig. 54); to treat all children equitably; to help children start farming; to reduce state and federal estate taxes, income taxes, and gift taxes; to inform heirs what to expect so that they can make plans accordingly.

- The portion of the estate that is required by the surviving spouse to provide a sufficient income.
- Plans that will work regardless of who dies first.
- Provisions that should be made in case the surviving spouse should remarry.
- As a good business practice, retain an attorney for an annual legal checkup including a review of your estate plan. Estate planning requires legal documents to be drawn and executed and requires that all aspects of the plan meet specific legal requirements.

Fig. 55 — Real Property Includes Land And Permanent Improvements

GENERAL KINDS OF PROPERTY

There are two general kinds of property:

- Real property includes land and permanent improvements such as houses on the land (Fig. 55).
- Personal property includes moveable items. Personal property may be tangible objects such as livestock, machinery, and household goods, or intangible objects such as bank accounts, bonds, stocks, and negotiable notes.

METHODS OF OWNING REAL PROPERTY

There are many methods of owning real property:

Fee simple ownership gives the owner the unrestricted right to sell, mortgage, or dispose of real estate.

Co-ownership occurs when property is owned by two or more owners with undivided interests. This method of ownership includes tenancy in common, joint tenancy, and tenancy by entirely.

Tenancy in common provides for owners with undivided interests with no rights of survivorship but with rights to convey, mortgage, and otherwise care for as is available through fee simple ownership.

Joint tenancy provides for owners with undivided interests and with rights of survivorship (property cannot be conveyed by will). Such ownership does provide for conveying or mortgaging that owner's interest in the property. If conveyed outside of the joint tenancy, then the joint tenancy is broken.

Tenancy by entirety provides for owners with undivided interests and with rights of survivorship but does not allow for conveyance without consent of the other party involved in the tenancy by entirety.

Life estate entitles a person (life tenant) to receive income from or use of a property for their life only. When the life tenant dies the property goes back to the original owner.

Life estate is a little more complicated than fee simple. John Burke wants to buy some prime orange land on the east rim of California's San Juaquin Valley. But no one will sell. All the owners are sure that the land value will increase.

Frustrated, John visits a real estate broker and learns about a life estate plan. The broker arranges for John to buy land from Barry Brown, an elderly landowner who plans to will his land to his son.

In the life estate plan John Burke pays Barry Brown a price for the land and uses it as if it were his own until he dies. When Burke dies, the land automatically reverts back to Barry Brown or Barry's heirs (Fig. 56).

Fig. 56 — A Life Estate Plan Is Like A Boomerang

KINDS OF DEEDS USED IN CONVEYING LAND OWNERSHIP

Deeds are documents that show what real property is owned, who owns it, and what method of ownership they have. There are two kinds of deeds used to convey land ownership.

A warranty deed generally implies that at the time of delivering the deed:

- The seller owns property free and clear of legal claims such as liens and mortgages except those claims specifically mentioned in the deed.

- The seller has the right to transfer the property.
- The buyer will have quiet and peaceable possession.
- The seller will defend the title if anyone lawfully challenges its legality.

A quit claim deed generally implies that:

- The seller is only conveying the seller's rights in the property.
- Seller does not promise that he/she owns anything.

If the seller has no interest in the property, none will be conveyed. If a buyer buys the Brooklyn bridge, the buyer takes a quit claim deed from the seller. The deed is good. The seller has no financial interest in the bridge so far as the deed is concerned, the deed gives the buyer exactly what is expected; "any right, title, or interest" that the seller possessed in the bridge (Fig. 57). However, the seller is probably guilty of fraud, and the buyer still doesn't own the bridge.

Quit claim deeds have a use. They are often used to clear titles to property. All who have even a remote interest in the property give up their interest by signing a quit claim deed to one person. That person then holds the deed. If there are no other flaws in it, the buyer owns clear title.

Fig. 57 — A Quit Claim Deed Gives The Buyer All Of The Sellers Rights To A Property

TRANSFERRING LEGAL OWNERSHIP OF PROPERTY

Now that we have deeds to prove what we own, who owns it, and the method of ownership, how do we actually transfer property?

There are several ways of transferring legal ownership of property from one person to another. The most common are:

- Wills
- Laws of descent
- Contracts

  To sell property, a legal contract is necessary. Examples include the outright sale with mortgage, land contract and reserving life estate.

- Gifts

  Land may be given away by a deed that is properly signed, acknowledged, and delivered. This is where an attorney can help you. Personal property can be given away by handing over the property with the apparent intention of making the recipient the present owner.

- Combined sale and gift
- Co-ownership.

  Examples include tenancy-in-common, joint tenancy, tenancy by the entirety, partnership, and cooperative.

Fig. 58 — A Will Is A Legal Statement Of A Person's Wishes

WILLS

A will is a legal statement of a person's wishes concerning the disposal of property after death (Fig. 58). Correct wills are not difficult to make. Bad wills are nearly always the result of hasty preparation, obscure language, and failure to regard the fairly simple requirements of the law. Often the person tries to cover too many possible events and situations.

The only type of will recommended for estate planning is a formally executed will drawn by an attorney (Fig. 59). The law recognizes other types of wills, but these other types are best used only in an emergency.

Fig. 59 — The Only Type Of Will Recommended Is A Formally Executed One Drawn By A Lawyer

Facts About Wills

A will must first be proven official and admitted to the courts. Because of this, those wishes which need to be carried out immediately upon the death of the maker of the will should be left out and entrusted to a friend or relative. This person may be the executor/executrix of your will if you choose.

Other facts about wills include:

- They have no force or effect until the maker dies.
- They must control only the property individually owned by the maker of the will.
- They do not become effective immediately upon the death of the maker.

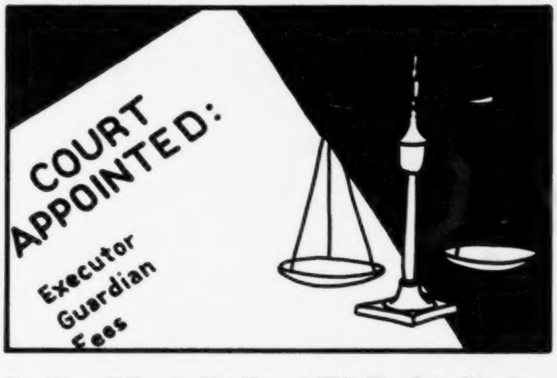


Fig. 60 — If You Do Not Have A Will, The State Distributes Your Propery

Reasons For Having A Will

Here is a list of reasons why you need a will.

- They allow you to distribute assets as you wish, not as the laws of descent decree.
- They reduce costs and time of settling the estate.
- You can name your own executor/executrix of the will to save time and money.
- You can name a guardian for minor children. (This provides someone you trust and like to care for your minor children).
- You can establish trust funds. A trust fund is established in a will to ensure the security of the beneficiaries. The money or property is left to an institution or person, who administers the property or money in accordance to the instructions in the will.
- The family can avoid internal conflict among its members.

Consequences Of Dying Without A Will

Every state has laws that govern the estates of deceased persons. These are called the laws of descent and distribution. If you fail to provide a will, the state will distribute your property according to this law. The law of descent is very complex. It would definitely be necessary for you to consult a lawyer before assuming that the law would carry out your wishes (Fig. 60).

Other consequences of dying without a will include:

- There will be a court appointed administrator/administratrix of your estate. This might be someone you distrust. The administrator/administratrix will probably demand a fee.
- There will be a court appointed guardian for your minor children. This could be someone you like, or someone you dislike.
- It will cost more to settle your estate. Your family may receive less.

ESTATE TAXES

Estate taxes are a tax on the right of an owner of property to transfer property to others at death. The federal government has a "unified transfer tax" which taxes the transfer of property by gift or death (Fig. 61). Most states impose estate taxes in addition to the federal tax. Because estate tax laws are very complex, it is recommended that you consult an attorney familiar with estate planning and estate taxes as you plan your estate transfer.

Fig. 61 — Property Given Or Willed Is Taxed

RETIREMENT

No estate plan is complete without provisions for retirement. Few of us will be able to work all of our lives. We need to have a source of income when we retire. There are several ways to build a retirement income. The best plan is to have several sources of retirement income (Fig. 62).

Fig. 62 — Plan More Than One Source Of Retirement Income

Here are a few sources of retirement income to choose from:

- Savings
- Employer-sponsored pension plans (Examples: teacher retirement, company profit-sharing)
- Tax sheltered retirement plans (Fig. 63):

  - Individual Retirement Accounts (IRA). These may be established by an individual even though other plans are in effect. An extra contribution may be made for a nonworking spouse.

  - Keogh Plan (HR-10). These may be established by self-employed people such as farmers or ranchers for benefit of themselves and their employees.

  - Simplified Employee Pension Plan (SEP). These may be established by an employer to make annual payments to an employee's or partner's IRA.

  - Qualified Retirement Plan (QRP). These may be established by a corporation for benefit of employees, including employees who are also shareholders (such as a closely held farm corporation).

Fig. 63 — Tax Sheltered Plans Can Help You Save For Retirement

- Annuity. These are a yearly payment from an invested sum for life or for a specified period of time to guarantee annual income.
- Trusts. These are a written agreement stating that an owner of property transfers title to a trustee for the benefit of beneficiaries.

Fig. 64 — Social Security Is Only One Source Of Retirement Income

- Life insurance. Investment type life insurance will insure certain amounts payable during the life of the policy. At some point in time you also may receive an annuity, lump sum, or loan from the policy.
- Social Security (Fig. 64).
- Continuing to operate the farm.
- Rental or lease of farm property.
- Sale of the farm.
- United States Savings Bonds.
- Commercial stocks and bonds.
- United States Treasury Bills.
- Nonfarm investments (Fig. 65).
- Certificates of Deposit.
- School bonds.
- Municipal bonds.

Fig. 65 — Nonfarm Investments Are Another Form Of Retirement Income

CONCLUSION

There are volumes of laws that apply to agriculture. We have only scratched the surface in this chapter. Remember that the purpose of this chapter is to familiarize you with some of the normal business transactions involving farmers and ranchers, and to make you aware of some dangers and opportunities in the law (Fig. 66).

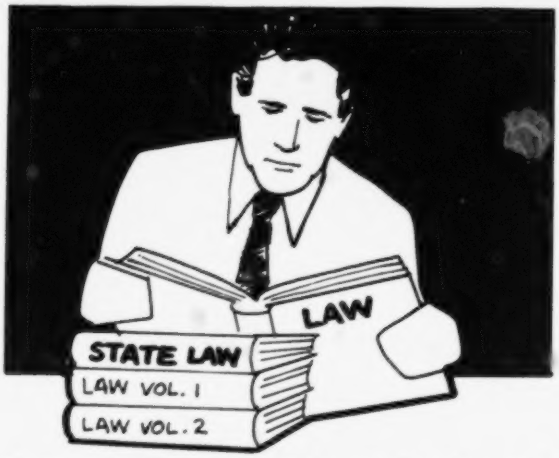


Fig. 66 — The Farm And Ranch Manager Must Know The Laws That Govern Their Business

You must become aware of the laws and regulations that affect your agricultural activities. You must use them to make more realistic day-to-day decisions in your farm or ranch business. Remember that when you have questions or uncertainties about business deals, consult a competent attorney familiar with agricultural laws and regulations (Fig. 67).

Fig. 67 — Find A Competent Attorney And Make Them One Of Your Team

COMPUTER APPLICATIONS

Chapter 12

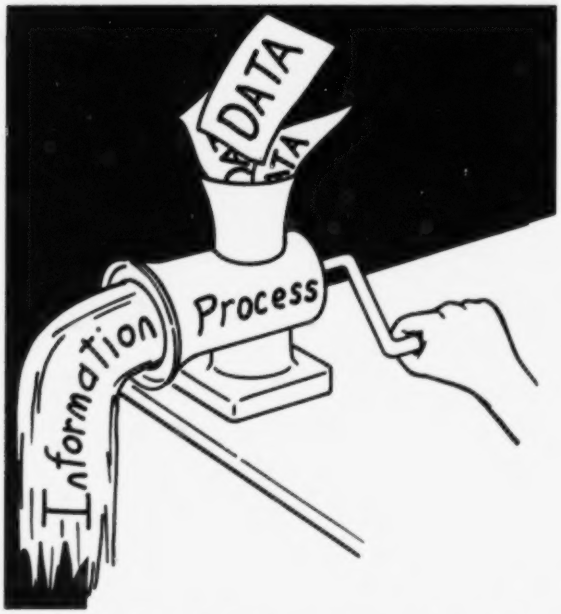


Fig. 1 — The Farm Or Ranch Manager Must Be Able To Process Data Into Useful Information

INTRODUCTION

The farm or ranch manager must be able to **collect** data and **process** it into **information** (Fig. 1). The success of an agribusiness depends upon the manager's ability to handle accounting tasks and make decisions. Farm and ranch managers increasingly are using the personal computer to help them solve problems

As a farm or ranch manager, you must evaluate your need for a computer. In some situations, you may find that a computer is a liability (Fig. 2). In others it may be an indispensable tool that you rely on to help you keep track of expenses and make decisions.

Fig. 2 — In Some Situations, The Computer May Be A Liability To Your Business

You must begin your evaluation by looking at the computer as a capital investment. There are four basic criteria that can help you decide:

- Can the computer pay for itself (Fig. 3)? Net income should at least remain constant with the purchase of a computer.

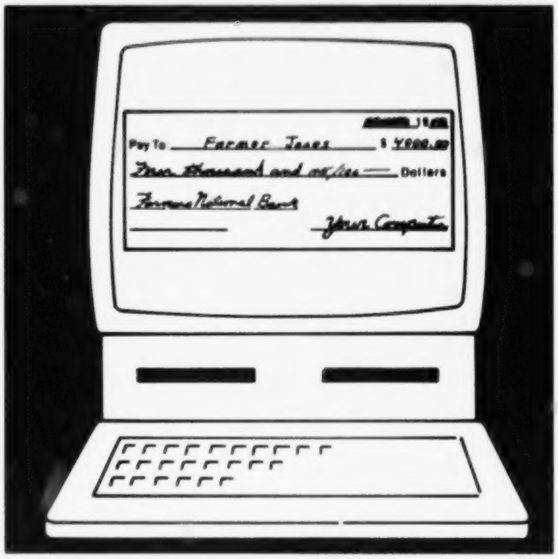

Pay To Farmer Jones $ 4000.00
Four thousand and no/100 Dollars
Farmers National Bank
Your Computer

Fig. 3 — Your Computer Must Be Able To Pay For Itself

- Do you have accurate sources of data to input into the computer?

- Do you have the time to collect data, input data, and evaluate data?

- Are you buying the computer as a miraculous cure for an ailing business? In some situations, the cost of the computer may add to the decline.

USES FOR A COMPUTER

Computers do routine jobs quickly and repeatedly without error. They "crunch" numbers and put them in usable forms (Fig. 4). A computer, however, does not create data; it only processes data.

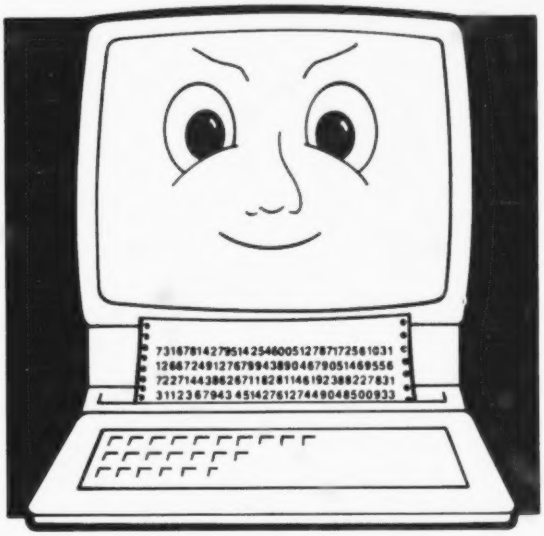


Fig. 4 — Computers "Crunch" Numbers

There are six main uses for a personal computer in agribusiness:

- **Accounting.** Computers can replace ledger books. The farm or ranch manager can store and total the costs and returns of the business on a computer.

- **Management.** Programs that can produce cash flow charts (templates), and least cost ration charts help you organize and analyze your data. Organized data helps you make the best management decision possible.

- **Telecommunications.** By adding a MODEM connection from your telephone to your computer, you can directly access data banks. These data banks can include up to the minute stock market and futures quotes, weather information, crop facts, fertilizer ratios and other information that previously took days and weeks to obtain (Fig. 5).

An electronic mail program can also be used that will put you in instantaneous contact with other computer users.

Fig. 5 With A Telephone Modem You Can Access Other Data Banks With Your Computer

- **Education.** Education is not limited to the classroom. With the computer, you can study correspondence courses. You can use programs that tell you how to use and maintain machinery. The computer allows access to many training programs that you may never have a chance to attend in person.

- **Word Processing.** A computer and printer also can be used as a typewriter. You can use them to create letters, forms, and reports. If the farm or ranch manager has another business such as feed or grain sales, the computer can be used to make mass mailings of advertisements.

  In some situations, the decision-making use of the computer and special programs may not be practical. Standard forms can be made to keep track of your sheep, cattle, and machinery (Fig. 6).

  Another word-processing capability is that the computer can be used to make tax, budget, loan applications, and lease forms that are used in the everyday operation of the agribusiness.

- **Recreation.** Some programs are designed as teaching games. There are many video and entertainment programs that are made for the computer.

Fig. 6 Word Processing Programs Also Can Help You Create Forms

INPUT AND OUTPUT

A personal computer can be divided into input and output parts. Input parts include (Fig. 7):

- **The Keyboard.** This is the typewriter like board that is used to type data into the computer. The keyboard also contains special command keys that can be used to help manipulate data.

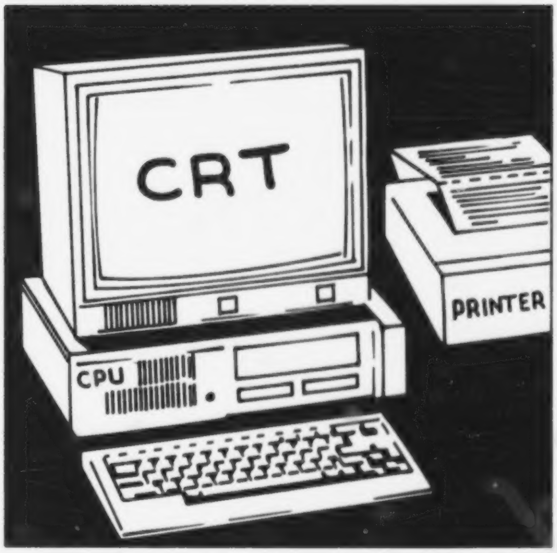


Fig. 7 — The Personal Computer

- **The Software.** Software is the programmed commands that tell your computer how to process data into information. Different software manages your data in different ways. Software is actually the invisible commands contained on discs and tapes (Fig. 8).

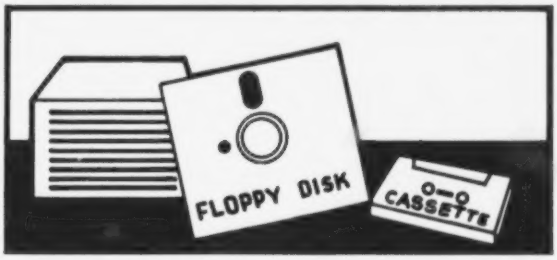


Fig. 8 — Software Is Programmed Floppy Discs Or Cassettes

- **The Central Processing Unit.** The CPU is both an input and an output device. It takes the input from the keyboard, adds the software commands, and sends the information to the output parts.

Output parts include:

- **The Cathode Ray Tube.** The CRT or television screen projects your processed data into a visual form.

- **The Printer.** The printer prints the processed information onto paper. Whatever appears on the CRT is output on the printer.

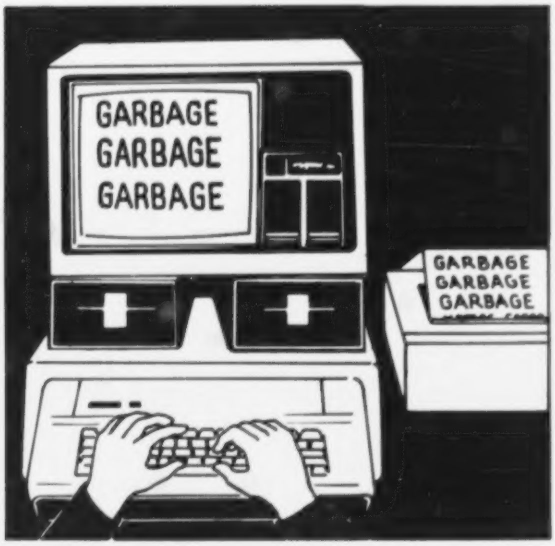


Fig. 9 — If You Put Garbage Into Your Computer You Will Get Garbage Out

THE DISADVANTAGES OF BUYING A COMPUTER

The computer does not have the ability to analyze and make decisions. Without your input, and your choice of programmed software, the computer does not work. If you are a poor record keeper with a pencil, then you may be a poor one with a computer. If you put "garbage in," then you will get "garbage out" (Fig. 9).

Time is another factor that you must consider. Every computer and piece of software have unique features. You will spend time learning these features. You also will spend time inputting data. You may spend even more time at the computer than you spend with a pencil under certain circumstances (Fig. 10).

Another disadvantage is that we are in a time when software and hardware are advancing very rapidly. It is difficult to project five or ten years ahead when you evaluate computers. Software that is useful today may be completely outdated in the future. You must take the time to choose the software and hardware that will grow with your business.

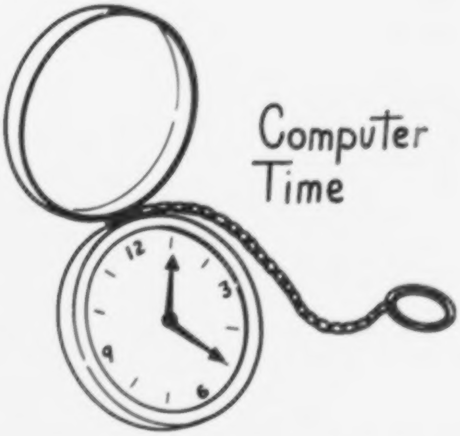


Fig. 10 — Time Is An Important Factor When You Evaluate Computers And Programs

THE ADVANTAGES OF BUYING A COMPUTER

Farm and ranch managers can use the computer to help them answer immediate "what-if" questions. For example, what if the amount of corn in a least cost ration is increased? The computer and software can recalculate the new input of data quickly and accurately. The computer can deal with a large amount of numbers in a very short time.

There are hundreds of software manufacturers that are constantly upgrading and developing software. Programmed software can help you handle a wide range of tasks. A few examples of software include:

- Accounting spreadsheets
- Word processing programs
- Whole farm budgets
- Feeder pig production charts
- Finishing hog production charts
- Enterprise budgets
- Fertilizer use recommendations
- Income tax forms
- Cash flow charts
- Depreciation tables
- Machinery maintenance tables

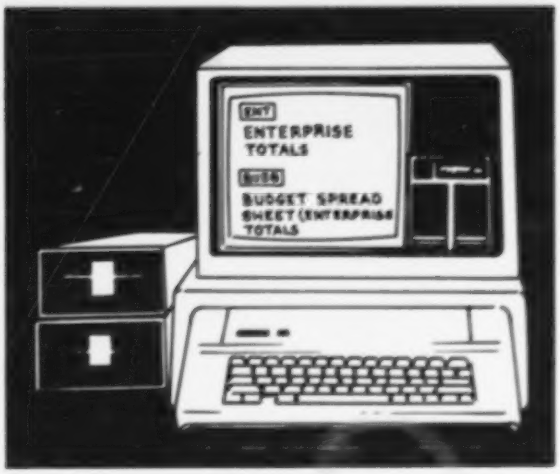


Fig. 11 — Integrated Programs Allow You To Make One Input And Use It Many Ways

Some programs are being designed to help reduce input time. Such programs as enterprise budgets may be combined with other programs. These "integrated" software programs let you use your data in different ways without re-inputting it (Fig. 11).

MAKING THE DECISION

Do not impulse buy a computer. You must be sure that you are able to commit your business data to a computerized system. Do not let yourself be oversold. Computers can only do one thing for your agribusiness. They can **help** you organize and make management decisions.

Weigh the purchase of a computer as you would any capital expense. First-hand experience is usually the best way to begin an evaluation of software and hardware. Use a similar system as much as possible before you buy.

Learn about computers from magazines, books, classes, seminars, and computer organizations in your area (Fig. 12). Weigh the cost against the return to help you make the decision.

Before you evaluate the depreciation of a computer, see the tax laws. You will not be able to depreciate a computer completely if it is used for recreation and education outside of your agribusiness.

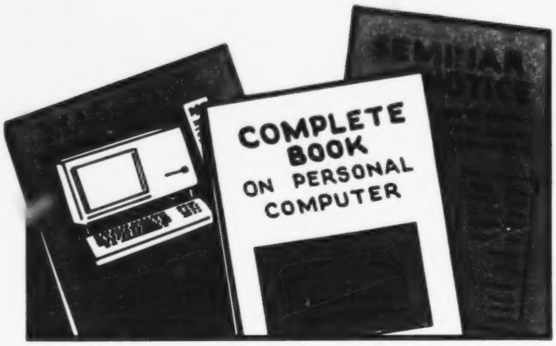


Fig. 12 — Learn As Much As Possible Before You Buy A Personal Computer

CASE STUDIES

THE NEW FARMERS — BOB AND SHANNA

Bob and Shanna are new farmers. In their sole proprietorship business Bob makes the management decisions. Shanna keeps their accounting and management records.

Six months ago when they began farming Bob kept his hog and crop data in his old 4-H book. His records were never complete. His new business soon outgrew his poor record keeping system (Fig. 13).

Fig. 13 — Bob And Shanna Realize That They Must Keep Better Records And Accounts

Since high school, Shanna has worked in an office in the nearby town. From her work experience she has grown to appreciate how useful a good set of accounting and management records can be. She also has seen what can be done with a personal computer and software. She thinks that a computer system might be what Bob and she need to help their business grow.

Wisely they evaluate their situation before they purchase a system. Like many young farm couples:

- They lack capital

- Their record keeping is still not sophisticated enough to meet their needs

- They find it difficult to obtain some loans and also carry on with business transactions with their current record-keeping system.

Shanna finds that the data that Bob gives her to enter into their records is incomplete and not accurate. They also are not good enough to enter into a computer system. Her first job is to help Bob learn the fundamentals of good data collection. She also researches the various types of accounting and management record-keeping systems that they can use in their agribusiness (Fig. 14).

Fig. 14 — Bob And Shanna Learn The Basics Of Good Agribusiness Record Keeping

As they develop their skills, they also research computer hardware and software. They soon realize that the price that they must pay for a computer system is beyond their budget. They have abundant labor but have a very tight cash flow.

They compromise and make arrangements with Shanna's employer that allows her to use her software on the company's computer. She stays after work once a week to input and print out their financial reports. They decide that it is a mistake to make a large investment in hardware until their enterprises begin to show greater returns.

THE CAUTIOUS SHOPPERS — JIM AND MARY

Jim and Mary have been on their ranch for eight years. Since they began their business they have made all of their purchases by check. Their sales of goods are always deposited at their bank. They have subscribed to a computer system offered by their bank to help them keep track of their **accounting** records. Their bank uses their checks and deposits as raw data.

Each month an employee of the bank inputs all of their transactions into the large central computer. Their data is processed and they receive a paper print out of their accounting records (Fig. 15).

Fig. 15 — Jim And Mary Find Print-Outs Very Useful When They Must Make Decisions

Sometimes they find errors in their output information. They know that such errors are input errors made by the bank employee. This makes them think about buying a personal computer for their home. Their reasons are:

- They can eliminate all input errors by the bank employee and thereby get more accurate output.
- They can get output as often as they want instead of once every month.
- They currently receive records that are limited to the standard bank software.
- They pay $500 a year for this service. They feel that a $3,000 system that also helps them manage their cow herd can pay for itself in three years.

They also think of the disadvantages:

- The bank software is not compatible with personal computers.
- They want to compare the results of past years with their current financial situation. If they buy a personal computer, they must begin a new system and transfer old data to that system (Fig. 16).
- Their "old" system has been successfully used by them and hundreds of other ranchers and farmers to help them make management decisions.
- They basically like the old system. New software may not be as easy for them to understand.

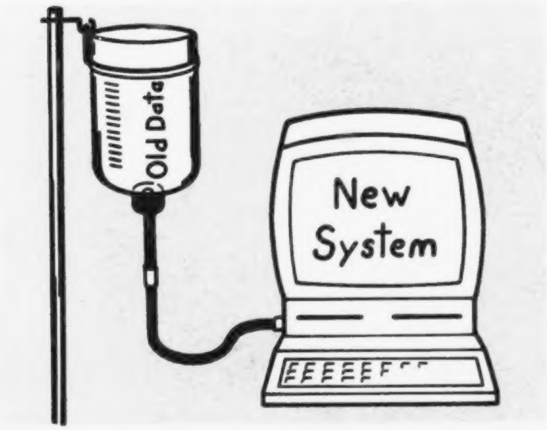


Fig. 16 — Jim And Mary Must Transfer All Old Data Into Their New System

Jim and Mary have limited resources. They decide to purchase a computer if they can meet these criteria:

- Their initial cost is limited to $2,000 for hardware and $1,000 for software.
- They must find software that is as good or **better** than their current system.
- The software must be flexible enough to add their own unique situations to the programs.
- The new system must be easy to operate and understand.
- The new system must be a single entry like their old one.

They also agree that if a personal computer is purchased, then they will keep their old system for one more year. Their accounting records are too important to be trusted to an untested computer system.

Jim and Mary begin their search by making a checklist of what they need. They do not want to be "over-sold" by a computer salesperson and find that they have hardware and computer programs that they never use (Fig. 17).

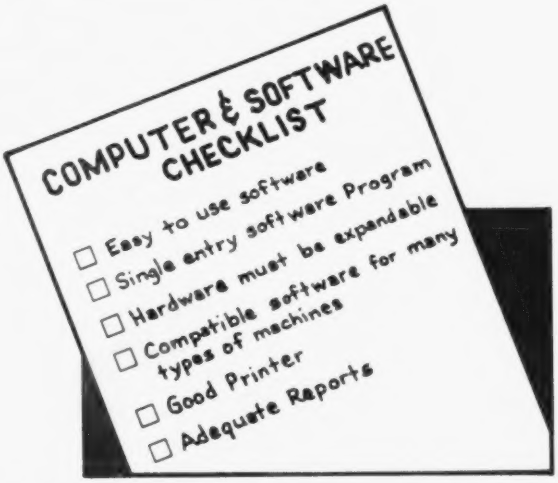

COMPUTER & SOFTWARE CHECKLIST
☐ Easy to use software
☐ Single entry software Program
☐ Hardware must be expandable
☐ Compatible software for many types of machines
☐ Good Printer
☐ Adequate Reports

Fig. 17 — Jim And Mary List Their Needs Before They Shop For A Computer

Their first experience is with a salesperson that demonstrates a complete agribusiness "package." This package is $2,000 above the bottom line available cash that they have for their computer. They also find that half of the programs that they pay for in this package are not applicable to their agribusiness.

Jim and Mary know that their hardware must pay for itself. They also know that they must make their software programs do the same (Fig. 18). They will need additional software that can make:

- Cash flow statements
- Balance sheets
- Monthly taxable income results
- Investment credit reports
- Money borrowed reports
- Year-to-date totals for income and expenses

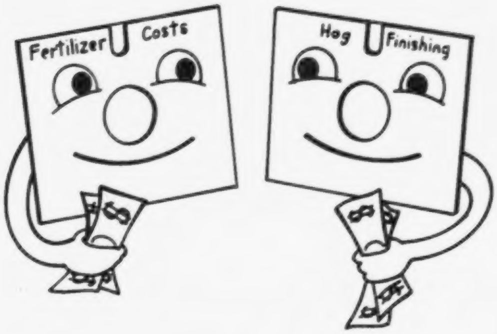


Fig. 18 — Make Every Piece Of Software Pay For Itself

They find a computer salesperson that knows about agriculture and about the abilities and failings of many of the computers on the market (Fig. 19).

With the expert help of the salesperson, they decide to purchase hardware that gives them compatibility with major software programs.

Fig. 19 — Jim And Mary Find A Computer And Software Dealer That They Can Trust

They cautiously buy only the software that helps them manage their accounting. Since they have retained their bank system of accounting for one year, they have time to learn how to use their equipment and software before they are forced into keeping their own records. They also have one year to transfer their old data into the new system.

Jim and Mary are now able to expand their system as their finances and time permit (Fig. 20).

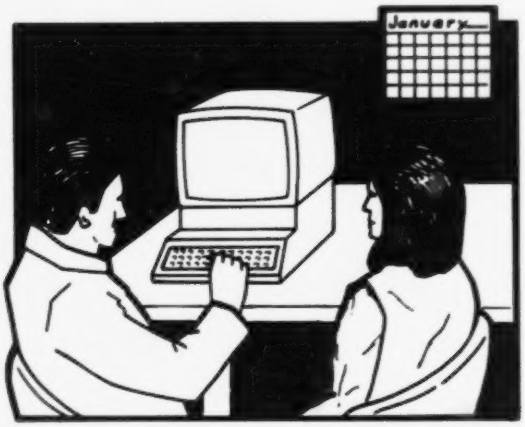


Fig. 20 — Jim And Mary Give Themselves Plenty Of Time To Learn How To Operate Their New System

THE COMPUTERIZED FARM — MIKE AND SHIRLEY

Mike and Shirley are a middle-aged couple. They have been on their land for twenty years and have worked hard so that their business would grow and prosper. When they began their sole proprietorship farm they could make decisions by "gut" feelings.

Mike and his neighbors didn't rely that much on collected data and information to help them make management decisions. When they **thought** that they needed a tractor, they **bought**.

Some of his neighbors are still making decisions in this manner. In the past, a bad guess that turned into a liability could be covered up by hard work. The farmer or rancher could work their way out of the problems that were caused by poor management.

Mike and Shirley know that this will not be true in the future. Their success in the future will be the result of management skills and not as much the result of labor (Fig. 21). They know that they must analyze and make good decisions in order to stay competitive.

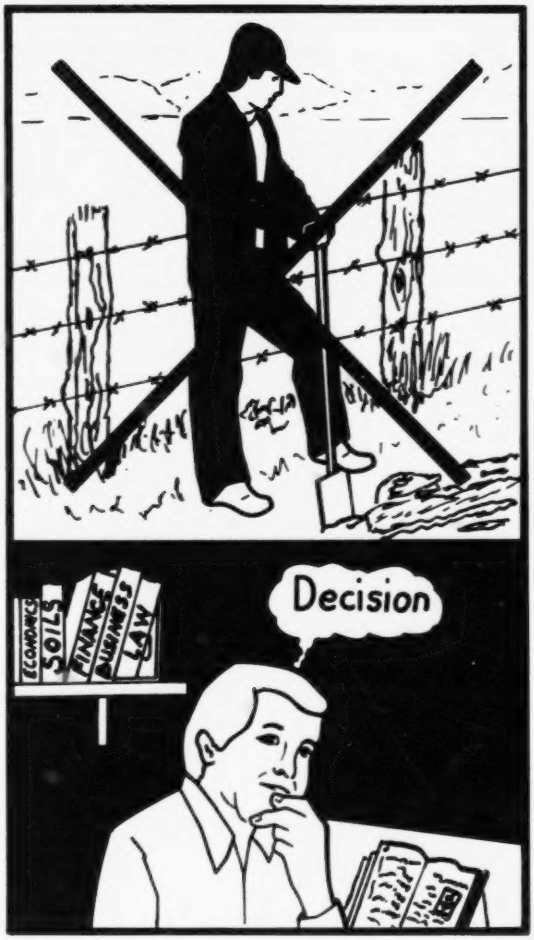


Fig. 21 — Success For Agribusiness In The Future Will Depend More On Management And Not Labor

They bought a computer a year ago. They have grown to rely on the computer to help them run their expanding operation. The problem that faces them is that they do not have enough time to keep everything that they need on the computer.

Mike and Shirley are buying corn and soybean land. They are renting farm land from four landlords. Most of their machinery is owned in partnership with Mike's father and brother. Not only do they use their computer for keeping track of this information, they also use it to:

- Monitor feed rations (they buy $150,000 of feed a year).
- Plan enterprises and budgets.
- Help market crops.
- Keep all tax and accounting records.
- Schedule the workload of the farrowing and feeder pig operation. (They have a series of pens that each hold 15 sows. Each pen is numbered. Every job from birth to sale is entered into their computer. Mike enters data every night and every morning prints out his daily chores that are listed under the pen number) (Fig. 22).

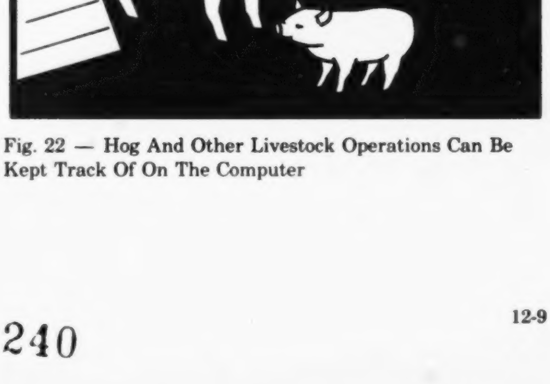


Fig. 22 — Hog And Other Livestock Operations Can Be Kept Track Of On The Computer

Their operation has grown so fast that they do not have enough time to input and manipulate all of their data in their computer. Mike and Shirley must decide the best application for their system. They prepare a time-share chart that allows them to evaluate the best use of their time and system.

They decide to purchase an accounting contract with a nearby savings and loan firm at $500 per year. They need the immediate facts on cost ration and their pig operation every day. The remainder of the uses occur sporadically throughout the year and do not have a daily impact on their time schedule. They save 35% of their input time by leasing business with an outside computer service.

% OF USE	USE	SAVINGS PER YEAR
12%	Cost Ration, Feed Inventory	$1600
3%	Marketing (Estimated Savings)	$ 900
35%	Accounting (Opportunity Cost)	$ 500
2%	Machinery Maintenance	$ 100
3%	Word Processing (Lease Forms, Contracts)	$ 100
35%	Furrowing, Feeder Pig Operation	$1500
10%	Soybean, Corn and Other Enterprises	$ 500

They estimate their yearly savings if they do not have concrete data. They do this by deciding how inconvenienced that they would be without the use of their computer.

No matter what they decide to do, Mike and Shirley agree that their personal computer and software are returning more money per dollar invested than any machine in their business (Fig. 23).

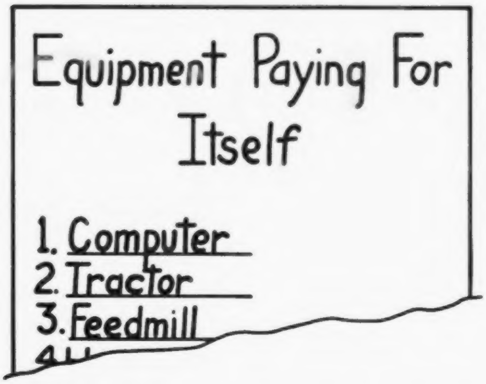


Fig. 23 — Mike And Shirley Feel That Their Computer Has Been Their Best Capital Investment

PART-TIME FARMERS — BRIAN AND JOANN

Brian and Joann have worked in business and industry jobs for twelve years. Five years ago they moved to a small homestead and began part-time farming. They and their two small children have plans to expand their modest operation into a full-time job.

They can keep all of their records in a small ledger book. Agribusiness life is not that complicated at this time. They are, however, thinking of the future. They have evaluated the cost, and have decided to purchase a personal computer and a few introductory programs.

They both agree that it would be helpful to know how to operate a computer. They know that they will need the processing ability of a computer when they begin full-time farming.

They couldn't justify their purchase except that it might be useful "in the future." Unfortunately, future expected returns do not pay the bills today.

They feel that the computer has some uses that they could not put a price on. Their two children are both in grade school. Some of their textbooks have software programs that help with homework and with other learning exercises (Fig. 24).

Fig. 24 — Brian And Joann's Children Will Use Their Computer To Help Them Complete Homework

They also know of some educational games that are fun for children. Some educational and entertaining software is even available through their local 4-H (Fig. 25). Also, the children love to play the electronic arcade games when they go shopping at the local mall. Brian and Joann know of numerous games similar to these arcade games that can be played on the personal computer that they are going to buy.

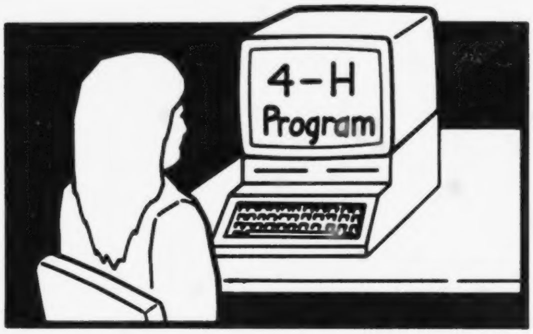


Fig. 25 — The Computer Can Be Used For Recreation And Education At The Same Time If Software Is Carefully Chosen

They choose their basic model of computer after careful evaluation. It suits their present needs (Fig. 26).

- It can be expanded to use the sophisticated software necessary to run a small agribusiness.
- It can be used **today** as a recreational and educational tool by their children.

Brian and Joann also have decided to buy a telephone MODEM hook up. They will have a direct line that they can use to communicate with their state university agriculture department, their commodity broker, their farm organization and other data banks. Not only can they use this modem to help answer questions to current problems, they feel it will be invaluable when they expand their operation.

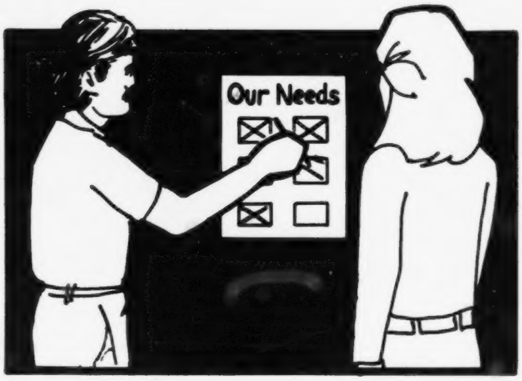


Fig. 26 — Brian And Joann Chose Their Computer Because It Suits Their Needs

Conclusion

Computers are valuable if:

- The machine and software pay for themselves
- The software is reliable.
- Accurate input data is available
- Time is available to input and analyze output from the machine.

Computers on the farm can (Fig. 27):

- Improve accounting procedures and systems.
- Improve scheduling of operations.
- Be used to help make management decisions.
- Be used for word processing.
- Be used for education and recreation.

Suggested steps to selecting a computer:

- Get first hand experience with the computer system and software that you are planning to purchase if possible. Be sure that the hardware and software are compatible.
- Determine your own needs and uses. Different people have different values and priorities.
- Buy a starter computer and starter software unless you are absolutely sure that you can use a "packaged" system completely. Be sure that the system can be expanded for future needs.

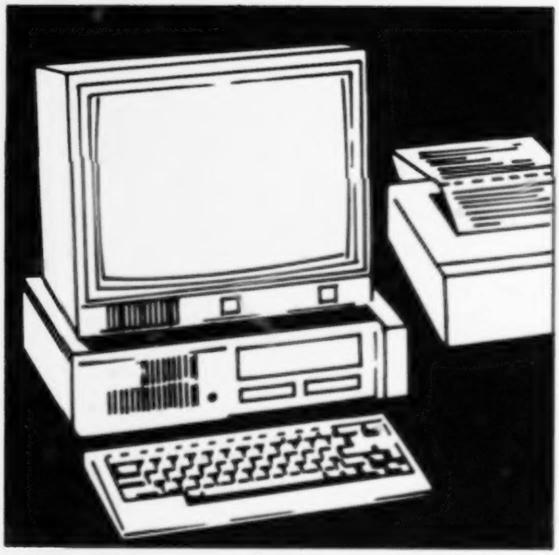


Fig. 27 — The Computer System

WHOLE FARM CASE STUDY

Chapter 13

Fig. 1 — With Hard Work And Good Management, The Browns Have Expanded Their Farm.

BROWN FARM

Bill and Ann Brown have been on their land for twenty-five years. They have worked hard and with good management have expanded from their original 160 acres of cropland to an ownership of 960 acres. They rent an additional 2,540 acres (Fig. 1).

Their two children have become an integral part of their farming operation. Kim, 16 years old, is in high school. Ted, 20 years old, recently graduated from the land-grant university with a two-year Associate degree in Agriculture Mechanics (Fig. 2).

LAND USE

Bill and Ann, using the name Brown Farm, control a total of 3,500 acres. Their primary crop enterprises are dryland wheat, cotton, and alfalfa hay. They have a cow-calf operation that they run on rented grassland. While Ted was at college, Brown Farm raised wheat and ran stocker steers on 160 acres of land that Ted is buying.

Fig. 2 — Ted Recently Graduated With An Associate Degree In Ag Mechanics.

Actual land use for Brown Farm last year was:

- 1150 acres of wheat
- 780 acres of cotton
- 1500 acres of native grassland for grazing
- 70 acres of alfalfa hay
- Ted's 160 acres of wheat.

Total land use is 3,660 acres when Ted's land is included. Brown Farm also ran 200 cow-calf units and 250 stocker steers during the year.

Until a mild drought and other financial setbacks occurred three years ago, Brown Farm was an above average profitable farm business. Due to its structure, the monthly cash flow at that time was erratic, but this is expected for this type of farming operation.

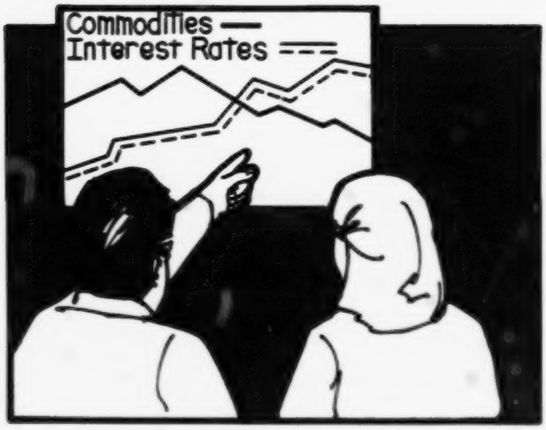


Fig. 3 — Bill And Ann Have Successfully Survived A Depressed Farm Economy Before.

Today the Browns find that farm commodity prices have dropped below past returns. Interest rates and other costs, however, have steadily increased (Fig. 3).

Bill and Ann know that they are in a recessed farm economy. They also know that they have faced problems like this before and have successfully solved them.

TED AND LISA

Ted met his fiancee, Lisa, in an ag accounting class at college. Lisa has one semester remaining before she receives her degree in Agriculture Economics and Accounting. They plan to marry when Lisa's program is completed and find jobs in agriculture.

Ted already has a start. Like his parents Ted borrowed money to buy a 160 acre wheat farm when he was a Senior in high school. While he was in college, Ted rented the 160 acres of land to Brown Farm. Winter wheat was grown on the 160 acres and stocker steers were pastured on the wheat during the winter and early spring (usually October 1 to March 15).

Ted is now working for wages at Brown Farm. With his educational experience and the impending marriage, Ted is ready to accept more responsibility. He also wants to be in a financial position to gradually expand his farming operation (Fig. 4).

Fig. 4 — Ted Is Ready To Shoulder More Responsibility.

TED'S BUSINESS PROPOSAL

Ted approaches his family with a plan. He suggests that Brown Farm be organized into a partnership or a corporation. He feels that his hard work and skills can make Brown Farm become more efficient in machinery management. As a member of the decision-making committee he feels that he would work even harder.

Bill and Ann are excited about the prospect of having Ted continue working with Brown Farm. He has shown that he has great potential in many areas of the farming operation.

After the initial reaction of the family members, they begin to evaluate the proposed reorganization from a business standpoint. Their questions include:

- Which organization is best for Brown Farm?
- Is Brown Farm able to support two families?
- Is Bill willing to give up his role as the sole decision-maker and accept Ted as a partner in making decisions?
- Do Ted and Lisa, Ted's fiancee, want to become part of the new business next year? In the future?

The Browns have several family meetings on the subject. Unfortunately no farm or ranch business management course was included in Ted's agriculture mechanics program at college (Fig. 5). The Browns do not know where to start. Without data, they cannot make a good business decision.

Uncertain about what to do, they schedule a meeting with a farm and ranch business consultant. Their research to this point has been limited to talking to their neighbors about their organization. The Brown's especially want to ask the consultant about partnerships and corporations.

Fig. 5 — Ted Does Not Have The Knowledge That He Needs About Business Organizations.

THE REVIEW

The consultant agrees in the initial meeting that the Browns can apply either a partnership or a corporation structure to their business. The partnership seems to be the best situation for everyone. They could:

- Pool capital and labor.
- All share responsibility in managing the enterprises that they are most familiar with.
- Rely chiefly on Ted's labor.
- Rely on Bill to furnish most of the assets in addition to his labor and management skills.

The consultant then said that their next step must be to look at the financial records of Brown Farm (Fig. 6). The consultant carefully evaluates the cash flow chart, net worth statement, and farm income statement from last year.

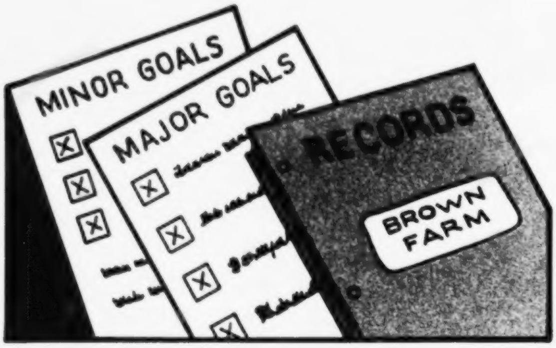


Fig. 6 — The Browns Review Their Major Goals, Minor Goals, And Financial Records.

FORM 6.1 **CASH FLOW** Brown Farm **FINANCIAL PLAN OR SUMMARY**

	LINE	JAN.	FEB.	MAR.	APR.	MAY	JUNE	6-MONTH SUBTOTAL
RECEIPTS								
Crop Sales Wheat	1	1130	1553				62598	65281
Alfalfa-Hay	2	6575						6575
Cotton	3	27420	203					27623
	4							
Government Payments	5	7855	9549				160	17564
Custom Work	6							
Dividends, Refunds, Resales	7			125	863	1320		2308
Cash Rent, Other	8				1100			1100
Livestock Products (add columns 9-10)	10							
Misc. Income (add columns 11-12)	12	2000						2000
Non-Breeding Livestock Raised (add cols. 13-14)	14					21552		21552
OPERATING SALES TOTAL (add lines 1-14)	A	44980	11305	125	1963	22872	62758	144003
Livestock Purchd. for Resale Sales Tot. (add cols. 15-16)	16			4950			26228	31178
Breeding Livestock Sales (add columns 17-18)	18		325					325
Machinery, Equipment, Building Sales	19		325					325
CAPITAL SALES TOTAL (add lines 18-19)	B	-0-	650	-0-	-0-	-0-	-0-	650
TOTAL FARM RECEIPTS (add lines A plus 16 plus B)	C	44980	11955	5075	1963	22872	88986	175831
INFLOW FROM LOANS	20		50188	85000	259853		81500	476541
NON-FARM RECEIPTS	21	521	2169	4900	3770	1414		12774
TOTAL DOLLARS AVAILABLE (add lines C plus 20 plus 21)	D	45501	64312	94975	265586	24286	170486	665146
EXPENDITURES								
Hired Labor	25	1771	1501	2100	2587	2361	2098	12418
Repairs	26	1459	1614	164	1371	810	1925	7343
Interest	27	3415	11937	10048	1100	600	9060	36160
Feed	28		227	457		21		705
Seed, Plants, Other	29	180		5				185
Fertilizer, Lime, Chemicals	30	295	5063	12617		1304		19279
Machine Hire	31		622	295		1044	18196	20157
Supplies	32	2783	2441	908	1026	4118	1538	12814
Breeding Fees	33							—
Miscellaneous Expenses	34	476	185	310	491	25	273	1760
Vet. Medicine	35		26	13	121	85	1009	1254
Fuel and Oil	36	28		10261		323		10612
Storage	37							—
Taxes	38	927		674		309		1910
Insurance	39	865	65	87	407	119	289	1832
Utilities	40	233	196	218	142	197	183	1169
Cash Rent	41	600	5750		1300	6908	1985	16543
Freight, Trucking	42	143	100	290		20		553
Conservation Expense	43	1035				430	14	1479
OPERATING EXPEND. TOTAL (add lines 25-43)	E	14210	29727	38447	8545	18674	36570	146173
Livestock Purchd. for Resale Tot. (add cols. 44-45)	45					2714		2714
Breeding Stock Purchases Beef	46	650		74050				74700
	47							
Machinery and Equipment Purchased	48			9275		5300	3250	17825
Land and Building Improvement	49					2125		2125
CAPITAL EXPENSES TOTAL (add lines 46-49)	F	650	-0-	83325	-0-	7425	3250	94650
TOTAL FARM EXPENSES (add lines E plus 45 plus F)	G	14860	29727	121772	8545	28813	39820	243537
Outflow From Loans	50	18509	41859	215888			139840	416096
Non-Farm Expenses & Investments	51							
Family Living	FL	967	4750	1236	1597	1344	623	10517
TOTAL DOLLARS USED (add lines G thru FL)	H	34336	76336	338896	10142	30157	180283	670150
Cash Difference for Month (lines D minus H)	I	11165	⟨12024⟩	⟨243921⟩	255444	⟨5871⟩	⟨9797⟩	⟨5004⟩
Cash Balance Beginning of Month (line K last month)	J	5892	17057	5033	⟨238888⟩	16556	10685	5892
Cash Balance End of Month (add lines I + J)	K	17057	5033	⟨238888⟩	16556	10685	888	888
		JAN.	FEB.	MAR.	APR.	MAY	JUNE	6-MONTH SUBTOTAL

FORM 6.2 **CASH FLOW** **FINANCIAL PLAN OR SUMMARY**

	LINE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	YEAR END TOTAL
RECEIPTS								
Crop Sales Wheat	1							65281
Alfalfa - Hay	2							6575
Cotton	3						13010	40633
	4							
Government Payments	5	1562		711				19837
Custom Work	6							
Dividends, Refunds, Resales	7							2308
Cash Rent, Other	8							1100
Livestock Products (add columns 9-10)	10							
Misc. Income (add columns 11-12)	12							2000
Non-Breeding Livestock Raised (add cols. 13-14)	14							21552
OPERATING SALES TOTAL (add lines 1-14)	A	1562	-0-	711	-0-	-0-	13010	159286
Livestock Purchd. for Resale Sales Tot (add cols. 15-16)	16		11000			6675		48853
Breeding Livestock Sales (add columns 17-18)	18				5260	519		6104
Machinery, Equipment, Building Sales	19				3500			3825
CAPITAL SALES TOTAL (add lines 18-19)	B	-0-	-0-	-0-	8760	519	-0-	9929
TOTAL FARM RECEIPTS (add lines A plus 16 plus B)	C	1562	11000	711	8760	7194	13010	218068
INFLOW FROM LOANS	20	65000		7500	11500	17300	6500	584341
NON-FARM RECEIPTS	21	376	1669	5473	963	2439	2801	26495
TOTAL DOLLARS AVAILABLE (add lines C plus 20 plus 21)	D	66938	12669	13684	21223	26933	22311	828904
EXPENDITURES								
Hired Labor	25	995	2057	2896	2094	2810	2489	25759
Repairs	26	428	1226	764	387	238	128	10514
Interest	27	9179	500	650	400	4729	500	52118
Feed	28			49	320	148		1222
Seed, Plants, Other	29						759	944
Fertilizer, Lime, Chemicals	30	16166						35445
Machine Hire	31	3543	2886	2852	1507	252	7401	38598
Supplies	32	421	101	121	136	756	308	14657
Breeding Fees	33							—
Miscellaneous Expenses	34	158	121	206	111	347	268	2971
Vet. Medicine	35	71						1325
Fuel and Oil	36	5283	67	323		4167		20452
Storage	37							—
Taxes	38				308	591	1349	4158
Insurance	39	132	165	276		185	525	3115
Utilities	40	192	200	175	216	107	163	2222
Cash Rent	41	3335	43	450	350	3788	3740	28849
Freight, Trucking	42	310	411	408	170	4		1856
Conservation Expense	43	1563			934			3976
OPERATING EXPEND. TOTAL (add lines 25-43)	E	41776	7777	9170	6933	18122	17630	247581
Livestock Purchd. for Resale Tot (add cols. 44-45)	45	2558	3310					8582
Breeding Stock Purchases	46							74700
	47							
Machinery and Equipment Purchased	48				11500			29325
Land and Building Improvement	49							2125
CAPITAL EXPENSES TOTAL (add lines 46-49)	F	-0-	-0-	-0-	11500	-0-	-0-	10 6150
TOTAL FARM EXPENSES (add lines E plus 45 plus F)	G	44334	11087	9170	18433	18122	17630	362813
Outflow From Loans	50	8050				13321	2500	439967
Non-Farm Expenses & Investments	51							
Family Living	FL	790	1421	142	1114	693	895	16842
TOTAL DOLLARS USED (add lines G thru FL)	H	53174	12508	10582	19547	32136	21025	819122
Cash Difference for Month (lines D minus H)	I	13764	161	3102	1676	<5203>	1286	9782
Cash Balance Beginning of Month (line K last month)	J	888	14652	14813	17915	19591	14388	5892
Cash Balance End of Month (add lines I + J)	K	14652	14813	17915	19591	14388	15674	15674
		JULY	AUG.	SEP.	OCT.	NOV.	DEC.	YEAR END TOTAL

FORM 6.3 DATE: NET WORTH STATEMENT: FARM AND NON-FARM ASSETS 19___ Brown Farm

LINE	NON-FARM ASSETS	BOOK VALUE			CURRENT VALUE		
		BEGINNING	ENDING	NETCHANGE (2-1)	BEGINNING	ENDING	NETCHANGE (5-4)
1	Family Bank Balance	$	$	$	$	$	$
2	Savings				2500	2500	-0-
3	Stocks and Bonds (present value)						
4	Accounts and Notes Receivable						
5	Life Insurance (cash value)				11000	14000	3000
6	TOTAL NON-FARM CURRENT ASSETS (add 1 thru 5)				13500	16500	3000
7	Auto and other Vehicles (family share)						
8	Household and Other				10,000	10 000	-0-
9	Boat, Camper, Etc						
10	Non-Farm Real Estate				85 000	85000	-0-
11	TOTAL NON-FARM ASSETS (add 6 thru 10)				108500	111500	3000
	FARM ASSETS						
12	Cash in Farm Account	$	$	$	$ 6842	$ 15674	$ 9832
13	Farm Accounts Receivable (forms 4.1 + 4.2)						
14	Swine, non-breeding (form 3.6 line 10)						
15	Beef, non-breeding (form 3.6 line 21)				42265	95950	53685
16	Dairy, non-breeding (form 3.6 line 33)						
17	Other, non-breeding (form 3.6 line 37)						
18	Purchased Feeds (form 3.7 line 5)						
19	Stored Crops (form 3.7 line 16)				81513	106050	24537
20	Growing Crops (form 3.7 line 19)						
21	Supplies (form 3.7 line 35)				3885	3885	-0-
22	Other Current Assets (form 3.7 line 38)					2125	2125
23	TOTAL FARM CURRENT ASSETS (add 12 thru 22)				133505	223684	90179
24	Swine, breeding (form 3.6 line 5)						
25	Beef, breeding (form 3.6 line 16)				62570	119800	53230
26	Dairy, breeding (form 3.6 line 28)						
27	Other, breeding (form 3.6 line 35)						
28	Farm Accounts Receivable (forms 4.1 + 4.2)						
29	Machinery and Equipment (form 3.2)				187700	192 500	4800
30	TOTAL FARM INTERMEDIATE ASSETS (add 24 thru 29)				250270	308300	58030
31	Buildings (form 3.5)				23000	23000	-0-
32	Land (form 3.5)				605450	605450	-0-
33	TOTAL FARM LONG TERM ASSETS (add 31 + 32)				628450	628450	-0-
34	TOTAL FARM ASSETS (add 23 + 30 + 33)				1012225	1160434	148209
35	TOTAL ASSETS (add 11 + 34)				1120725	1271934	151209
	FINANCIAL RATIOS						
A	CURRENT RATIO (FARM) ÷ Current Assets (form 6.3 line 23) / Current Liabilities (form 6.4 line 58)				.96:1	1.19:1	.23
B	WORKING ASSET RATIO (FARM) Current + Intermediate Assets (form 6.3 lines 23 + 30) / Current + Intermediate Liabilities (form 6.4 lines 58 + 62)				2.11:1	1.51:1	<.60>
C	NET CAPITAL RATIO (FARM) ÷ Total Farm Assets (form 6.3 line 34) / Total Farm Liabilities (form 6.4 line 67)				1.92:1	1.73:1	<.19>
COLUMN		1	2	3	4	5	6

Brown Farm

FORM 6.4 DATE: **NET WORTH STATEMENT: FARM AND NON-FARM LIABILITIES 19**

LINE	NON-FARM LIABILITIES	BOOK VALUE			CURRENT VALUE		
		BEGINNING	ENDING	NET CHANGE (8-7)	BEGINNING	ENDING	NET CHANGE (11-10)
36	Charge Accounts	$	$	$	$	$	$
37	Notes, portion due next year						
38	Mortgages, due next year						
39	Accrued Interest on non-farm liabilities						
40	TOTAL NON-FARM CURRENT LIABILITIES (add 36-39)						
41	Notes, portion due after next year						
42							
43	Mortgages, portion due after next year						
44							
45	TOTAL NON-FARM LIABILITIES (add 40 thru 44)				-0-	-0-	
46	NON-FARM NET WORTH (line 11 minus line 45)						
	FARM LIABILITIES						
47	Short Term Farm Notes Payable (form 4.4)	$	$	$	$ 9500	$ 7000	$ <2500>
48					18811	25000	6189
49							
50	Accounts Payable (form 4.3)						
51							
52							
53	Credit Lines and Short Term Multipayt Notes (form 4.5)				83505	129927	46422
54	Intermed. & Long Term Notes Due Next Year (form 4.6)				13321	13321	-0-
55					13337	13337	-0-
56	Accrued Liabilities (taxes, rent, etc.) (form 4.3)						
57	Accrued Interest (form 4.3 thru 4.6)						
58	TOTAL FARM CURRENT LIABILITIES (add 47 thru 57)				138474	188585	50111
59	Intermed. Term Debt Due After Next Year (form 4.6)					18830	18830
60					15300	15300	-0-
61					27835	129926	102091
62	TOTAL FARM INTERMEDIATE LIABILITIES (add 59-61)				43135	164056	120921
63	Long Term Debt Due After Next Year (form 4.6)				223200	209863	<13337>
64					121079	107758	<13321>
65							
66	TOTAL FARM LONG TERM LIABILITIES (add 63-65)				344279	317621	<26658>
67	TOTAL FARM LIABILITIES (add 58 + 62 + 66)				525888	670262	144374
68	TOTAL FARM NET WORTH (line 34 minus 67)				486337	490172	3835
69	TOTAL LIABILITIES (add 45 + 67)				525888	670262	144374
70	TOTAL NET WORTH (line 35 minus 69)				594837	601672	6835
	FINANCIAL RATIOS						
D	NET CAPITAL RATIO (FARM & NON-FARM) = Total Assets (form 6.3 line 35) / Total Liabilities (form 6.4 line 69)				2.13:1	1.90:1	<.23>
E	DEBT EQUITY RATIO = Total Liabilities (form 6.4 line 69) / Net Worth (form 6.4 line 70)				.88:1	1.11:1	.23
F	PERCENT EQUITY = Net Worth (form 6.4 line 70) / Total Assets (form 6.3 line 35) X 100	%	%		53.08%	47.30%	<5.78%>
COLUMN		7	8	9	10	11	12

FORM 6.5 Brown Farm **FARM INCOME STATEMENT FOR 19____**

	RECEIPTS				
1	Crop Sales (form 6.2 add lines 1 thru 4)			$ 112489	
2	Miscellaneous Receipts (form 6.2, add lines 5 thru 12)			25245	
3	Raised Non-Breeding Livestock Sales (form 6.2, line 14)			21552	
4	Livestock Purchased for Resale Sales (form 6.2, line 16)			48853	
5	Capital Sales (form 6.2, line B)			9929	
A	TOTAL FARM RECEIPTS (add lines 1 thru 5)				$ 218068
	EXPENDITURES				
6	Operating Expenditures (form 6.2, line E)			$ 247581	
7	Livestock Purchased for Resale (form 6.1, line 45)			8582	
8	Breeding Livestock (form 6.1, line 46 and 47)			74700	
9	Machinery and Equipment (form 6.1, line 48)			29325	
10	Land, Buildings, and Improvements (form 6.1, line 49)			2125	
B	TOTAL FARM EXPENDITURES (add lines 6 thru 10)				$ 362313
C	NET CASH INCOME (lines A minus B)				$<144245>
	ADJUSTMENTS FOR ACCRUED RECEIPT AND EXPENSE ITEMS				
11	Accounts Receivable[1] (form 6.3, line 13, col. 3)			$ 0	
12	Accounts Payable[2] (form 6.4, add lines 50 thru 52, lines 56 thru 57, col. 3)			- 0	
D	TOTAL ACCRUED RECEIPT AND EXPENSE ITEMS (line 11 minus 12)				$ -0-
E	NET FARM EARNINGS (add lines C and D)				$<144245>
	INVENTORY ADJUSTMENTS	(1) BEGINNING	(2) ENDING	(3) NET CHANGE (2-1)	
13	Livestock (form 3.6, line 39)	104835	213875	$ 109040	
14	Feed, Crops and Supplies (form 3.7, line 38)	85398	109935	24537	
15	Machinery and Equipment (form 6.3, line 29, col. 3 or 6)			4800	
16	Land, Buildings and Improvements (form 6.3, line 33, col. 3 or 6)			—0-	
F	TOTAL INVENTORY ADJUSTMENTS (add lines 13 thru 16, col. 3)				$ 138377
17	Value of Products Used in the Home (form S-1 or estimate)				1000
G	NET FARM INCOME: RETURN TO UNPAID LABOR, NET WORTH AND MANAGEMENT (lines E + F + 17)				$<4868>

[1] Include accounts for sale of livestock, livestock products, crops, supplies, machine work, etc. and prepaid expenses.

[2] Include operating accounts for purchase of feed, chemicals, custom services, insurance, and other accounts such as interest, property, employment and fuel taxes.

Spreadsheet - Brown Farm

	Year 1	Year 2	Year 3	Year 4
Current ratio	$ 2.01	$ 1.56	$ .96	$ 1.19
Working Asset ratio	2.49	2.37	2.11	1.51
Net Capital ratio (farm)	2.51	2.10	1.92	1.73
Net Capital ratio (non-farm)	2.67	2.28	2.13	1.90
Debt Equity ratio	.59	.71	.88	1.11
Percent Equity	62.3%	55.7%	53.1%	47.3%
Net Farm Income	$37,981	$15,786	$12,277	−4868

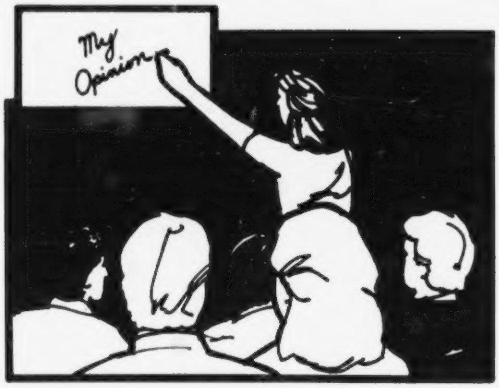


Fig. 7 — The Consultant Gives An Unbiased Opinion.

THE CONSULTANT'S OPINION

After reviewing the Brown Farm's financial statements for the past year and the cash flow ratios, the farm and ranch business consultant makes the following comments (Fig. 7):

Cash flow summary:

- There is a highly variable cash flow with lots of peaks and valleys. ($255,444 to a negative $243,921).
- There is a positive cash flow balance beginning at $5,892; ending at $15,674.
- Loan payments are not balanced with income on a monthly basis.
- The Browns should compare use patterns to see if this year is consistent with other years.
- Family living expenses are reasonable for a family of this size and are not unreasonably erratic from month-to-month.
- The Browns should evaluate capital expenditures to see if replacement patterns are on a trend.

Income statement:

- The Browns are living on borrowed money (i.e. return to unpaid labor, net worth and management is negative)
- Inventory increases create additional pressures for borrowed funds.

Net worth statement:

- There is a large increase in cash in the farm account.
- The consultant further asks "Was there a change in patterns of marketing nonbreeding beef and stored crops (nonbreeding beef went from $42,265 to $95,950)?" The Brown's explain that the increase is due to more stock steers being purchased and calves being born and held over to next year. Also the cotton harvest was late this year and not all of the crop has been sold.
- The results show a $53,230 increase in beef breeding, but show a purchase of $74,700 in cash flow and sales of $6,104. Is there a high death loss, overpayment for price, or any other factor? The Browns explain that an accounting error had been made. Part of the $74,700 purchase included cow-calf pairs.
- Machinery inventory is on target from beginning values. A 10% decrease in value due to use and purchases minus sales will approximate the ending value.
- There are increased short-term needs (current liabilities have increased).
- What is the increased intermediate-term debt for?
- There is a significant increase in liabilities for the farm. The Browns should look at the impact of this increased debt.

Spread sheet:

- All ratios are decreasing.
- There are continued liquidity problems even though the current ratio did make a slight move in the right direction last year.

Overall comments:

- The Browns need to look at the profitability of each enterprise to determine their strengths and weaknesses.
- They must consider new technology within each enterprise (such as lo-till or no-till, skip row, narrow row, fertilizer application timing, and soil testing).
- They must consider alternative enterprises which will level out the peaks and valleys in their cash flow and/or have a capital turnover rate.
- The consultant urges the Browns to set up another meeting in the near future to discuss the health and financial state of the entire operation. Survival of the business should be the Brown's only family concern at this time.

ALTERNATIVES

From the comments by the consultant the Brown family agrees that a partnership or corporation is not a good business arrangement at this time. In discussions with the consultant and with his family, Ted realizes that there may be other ways in the future that he can use to break into farming.

For the coming year Ted will continue to rent his 160 acre farm to Brown Farm. His family has agreed that Ted can work at Brown Farm with limited management responsibility in order to gradually gain experience. With this arrangement Ted will have the opportunity to work more closely with his father and learn the decision-making process of the farm business without formally reorganizing the farm.

In order to get Brown farm headed in the right financial direction, the Brown family and Ted begin to reassess their enterprises and methods.

TED AND LISA — ONE YEAR LATER

Ted and Lisa were married in January and are now living in a mobile home on Brown farm. Lisa has completed her college degree and Ted continues to work at Brown Farm.

- The Brown Farm family was able to determine what caused their financial problems. This stabilization of the business gives Ted and Lisa more choices than they had one year ago.

With Ted's year of work and management experience, Ted and Lisa decide it's time to set new goals and determine objectives that can be used to achieve them. Ted and Lisa have explored several employment and business opportunities and have narrowed their choices to three alternatives (Fig. 8).

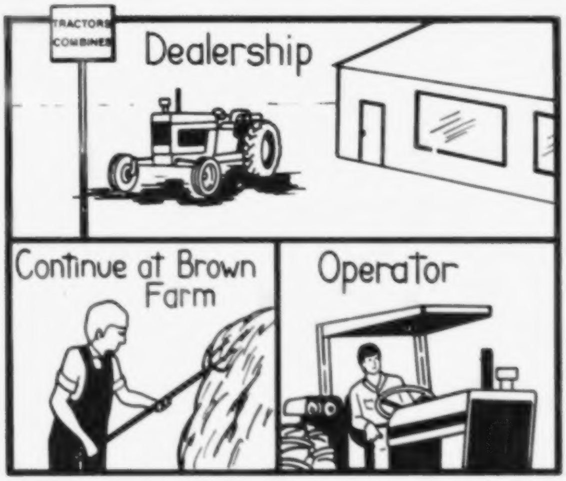


Fig. 8 — Ted And Lisa Consider Three Opportunities

ALTERNATIVE A

In Alternative A, Bill offers to turn over the wheat enterprise to Ted and Lisa. This would be a joint venture in which Ted and Lisa would pay 1/3 of the wheat yield to Bill and various landlords. Ted and Lisa would rent a total of 1,150 acres. Ted proposes and Bill agrees to rent the machinery necessary for the use in the wheat enterprise for \$10 per acre. (This cost varies greatly from situation to situation.) Ted agrees to rent the winter wheat pasture (October 1 to March 15) to Brown Farm for \$4,500 payable in March. This arrangement would allow Ted and Lisa to plant wheat on their farm and to run stocker steers on their wheat pasture.

Ted and Lisa realize that Alternative A would be good only for one year, but would give them valuable experience in handling money and managing production.

ALTERNATIVE B

Ted has an offer to work as an agricultural mechanic at a local equipment dealer. This includes a 45-hour work week and a salary of \$1,440 per month. Ted and Lisa would plant wheat on their farm. They could rent the winter wheat pasture to Brown Farm for \$900 payable in March. Ted would exchange his labor for the use of Brown Farm's machinery that is necessary to farm his wheat ground.

ALTERNATIVE C

Another alternative that Ted and Lisa wish to consider is for Ted to continue working at Brown Farm. They estimated that Ted's wages would be \$1,200 per month (April through December) and \$800 per month (January through March). Ted and Lisa would plant wheat on their farm and run stocker steers on their winter wheat pasture.

Fig. 9 — Lisa Begins To Collect Data For Wheat And Stocker Steer Production.

ENTERPRISE BUDGETS

To help decide which alternative to choose, Lisa and Ted obtain representative enterprise budgets for wheat and stocker steers. Lisa collects data about their county and township crop yields (Fig. 9). She talks to area extension agronomists and livestock specialists about average yields, prices and returns. Ted reviews the production and cost records for Brown Farm for the past five years. After analyzing the information collected, Ted and Lisa make modifications in the representative enterprise budgets to fit their situation (Fig. 10).

The enterprise budgets to be modified include:

- Leasing wheat (1/3 landlord's share).
- Growing wheat on Ted and Lisa's farm.
- Grazing stocker steers on winter wheat pasture.

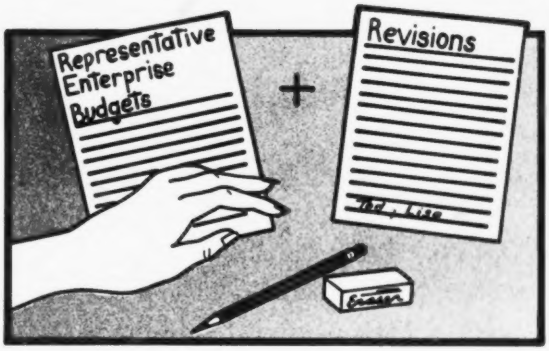


Fig. 10 — Lisa And Ted Modify Representative Enterprise Budgets.

Ted and Lisa's Modified Budget - Lease
[1/3 landlord share]

```
                                                                  76700804
Wheat - Loam Soils                                                01/02/85
Custom Combine & Hauling                                  WESTSOUTHCENTRAL

Operating Inputs:      Units       Price        Quantity   Value     Your Value

Wheat Seed             BU.         $4.300        1.250     $ 5.38
Nitrogen (N)           LBS          0.230       90.000      20.70
Phosph (P205)          LBS          0.190       20.000       3.80
Potash (K20)           LBS          0.120       20.000       2.40
Sprayer                ACRE         2.500        1.000       2.50
Custom Combine         ACRE        16.000        1.000      16.00
Custom Hauling         BU.          0.150       32.000       4.80
Misc. Expense          BU.          0.150       12.000       1.80
Annual Oper. Capital   DOL.         0.150       27.097       4.06
Labor Charges          HR.          4.250        ~~1.549~~ .5   ~~6.50~~   2.13
Mach,Fuel,Lube Repairs ACRE                                 12.31
                                                                      10.00
TOTAL OPERATING COSTS                                     $ 80.33   $85.58


FIXED COSTS            UNITS       VALUE        YOUR VALUE

Machinery
  Interest at 15.0%    DOL         $10.234
  Depr., taxes, insur. DOL           9.887

Land
  Interest at 0.0%     DOL           0.000
  Taxes                DOL           0.000

TOTAL FIXED COSTS                  $ 20.12      0.00

Production:            Units       Price        Quantity   Value     Your Value
                                                26.8
Wheat                  BU.         $3.400       ~~32.000~~    ~~$108.00~~   91.12
S. G. Pasture          AUMS         0.000        1.300       0.00

TOTAL RECEIPTS                                             ~~108.00~~   91.12

------------------------------------------------------------------------------
Returns Above Total Operating Costs                         ~~28.47~~   5.54

Returns Above All Costs Except
  Overhead, Risk and Management                              ~~8.35~~   5.54
------------------------------------------------------------------------------
N, P & K Amounts are in pounds of actual material.                   HUTSON
Misc. expense is lowest charge for yield over 20 bu.
Custom spray includes chemical.  Treadwell                        000001110

Processed by Dept. of Agri. Econ. - Oklahoma State University
Program developed at Dept. of Agri. Econ. - Oklahoma State University

Returns above total operating costs
When the price of wheat ranges from 3.00 to 3.80
and the quantity of wheat ranges from 28.00 to 36.00

                               PRICE OF WHEAT

                  ************************************************************
           28.00  *   4.27         9.87        15.47        21.07        26.67
                  *
           30.00  *   9.97        15.97        21.97        27.97        33.97
QUANTITY          *
OF WHEAT   32.00  *  15.67        22.07        28.47        34.87        41.27
BUSHELS           *
           34.00  *  21.37        28.17        34.97        41.77        48.57
                  *
           36.00  *  27.07        34.27        41.47        48.67        55.87

              Returns Not Adjusted For Effect of Yield Changes on Costs
```

Land has a five-year average yield of 40 bushels/acre. Ted and Lisa's share of yield would be 26.8 bushels.

Ted and Lisa's Modified Budget - Ted and Lisa's Farm

					76700804
Wheat - Loam Soils					01/02/85
Custom Combine & Hauling					WESTSOUTHCENTRAL

Operating Inputs:	Units	Price	Quantity	Value	Your Value
Wheat Seed	BU.	$4.300	1.250	$ 5.38	
Nitrogen (N)	LBS	0.230	90.000	20.70	
Phosph (P205)	LBS	0.190	20.000	3.80	
Potash (K20)	LBS	0.120	20.000	2.40	
Sprayer	ACRE	2.500	1.000	2.50	
Custom Combine	ACRE	16.000	1.000	16.00	
Custom Hauling	BU.	0.150	32.000	4.80	
Misc. Expense	BU.	0.150	12.000	1.80	
Annual Oper. Capital	DOL.	0.150	27.097	4.06	
Labor Charges	HR.	4.250	~~1.549~~ .5	~~6.50~~	2.13
Mach,Fuel,Lube Repairs	ACRE			12.31	
Rent Machinery					10.00
TOTAL OPERATING COSTS				$ 80.33	$ 85.58

FIXED COSTS	UNITS	VALUE	YOUR VALUE
Machinery			
Interest at 15.0%	DOL	$10.234	
Depr., taxes, insur.	DOL	9.887	
Land			
Interest at 0.0%	DOL	0.000	
Taxes	DOL	0.000	
TOTAL FIXED COSTS		~~$ 20.12~~	0.00

Production:	Units	Price	Quantity	Value	Your Value
Wheat	BU.	$3.400	36.00 ~~32.000~~	~~$100.00~~	122.40
S. G. Pasture	AUMS	0.000	1.300	0.00	
TOTAL RECEIPTS				~~100.00~~	122.40

Returns Above Total Operating Costs	~~28.47~~	36.82
Returns Above All Costs Except Overhead, Risk and Management	8.35	36.82

N, P & K Amounts are in pounds of actual material. HUTSON
Misc. expense is lowest charge for yield over 20 bu.
Custom spray includes chemical. Treadwell 000001110

Processed by Dept. of Agri. Econ. - Oklahoma State University
Program developed at Dept. of Agri. Econ. - Oklahoma State University

Returns above total operating costs
When the price of wheat ranges from 3.00 to 3.80
and the quantity of wheat ranges from 28.00 to 36.00

PRICE OF WHEAT

QUANTITY OF WHEAT BUSHELS					
28.00	4.27	9.87	15.47	21.07	26.67
30.00	9.97	15.97	21.97	27.97	33.97
32.00	15.67	22.07	28.47	34.87	41.27
34.00	21.37	28.17	34.97	41.77	48.57
36.00	27.07	34.27	41.47	48.67	55.87

Returns Not Adjusted For Effect of Yield Changes on Costs

Ted and Lisa's land has a three year average yield of 36 bushels/acre.

Ted and Lisa's Modified Budget - Steers on Wheat Pasture

100 HEAD STOCKER BUDGET PER HEAD
BUY OCT. 1. 400 LB. STEERS
SELL MARCH 1. 606 LB. STEERS

13701134
01/02/85
WESTSOUTHCENTRAL

Operating Inputs:	Units	Price	Quantity	Value	Your Value
Str Calves (4-500)	CWT.	72.500	4.000	290.00	
Starter Feed	CWT.	11.000	1.000	11.00	
Salt & Min.	LBS	0.090	12.500	1.12	
Trucking	HD.	3.750	1.000	3.75	
Sales Comm.	HD.	6.250	1.000	6.25	
Vet Medicine	HD.	6.500	1.000	6.50	
Utilities	HD.	1.500	0.150	0.22	
Annual Oper. Capital	DOL.	0.150	131.269	19.69	
Machinery Labor	HR.	4.250	0.900	~~3.82~~ 0	
Equipment Labor	HR.	4.250	0.110	~~0.47~~ 0	
Livestock Labor	HR.	4.250	0.850	~~3.61~~ 0	
Machinery Fuel, Lube Repairs	DOL			4.90	
Equipment Fuel, Lube Repairs	DOL			0.09	
TOTAL OPERATING COSTS				~~$351.44~~	$343.54

FIXED COSTS		AMOUNT	VALUE	YOUR VALUE
Machinery				
Interest at 15.0%		10.20	1.53	
Depr., taxes, insur.			1.80	
Land				
Pasture	2.34 AUMS		0.00	
Interest at 0.0%		0.00	0.00	
Taxes			0.00	
Equipment				
Interest at 15.00%		2.65	0.40	
Depr., Taxes, Ins.			0.57	
TOTAL FIXED COSTS			~~4.30~~	0.00

Production:	Units	Price	Quantity	Value	Your Value
Steers (6-700#)	CWT.	66.000	5.980	394.65	394.65

	Value	Your Value
Returns Above Total Operating Costs	~~43.21~~	51.11
Returns Above All Costs Except Overhead, Risk and Management	~~38.91~~	51.11

100 Head Stocker Budget, Buy Oct. 1 - Sell March 1 APPLE HUTSON
Gain 1.5#/Day from Oct. 15 to March 1

000001110

Processed by Dept. of Agri. Econ. - Oklahoma State University

Returns above total operating costs
When the price of steers (6-700#) ranges from 62.00 to 70.00
and the quantity of steers (6-700#) ranges from 5.58 to 6.38

PRICE OF STEERS (6-700#)

QUANTITY OF STEERS (6-700#)	62.00	64.00	66.00	68.00	70.00
5.58	-5.51	5.65	16.81	27.97	39.13
5.78	6.89	18.45	30.01	41.57	53.13
5.98	19.29	31.25	43.21	55.17	67.13
6.18	31.69	44.05	56.41	68.77	81.13
6.38	44.09	56.85	69.61	82.37	95.13

Returns Not Adjusted For Effect of Yield Changes on Costs

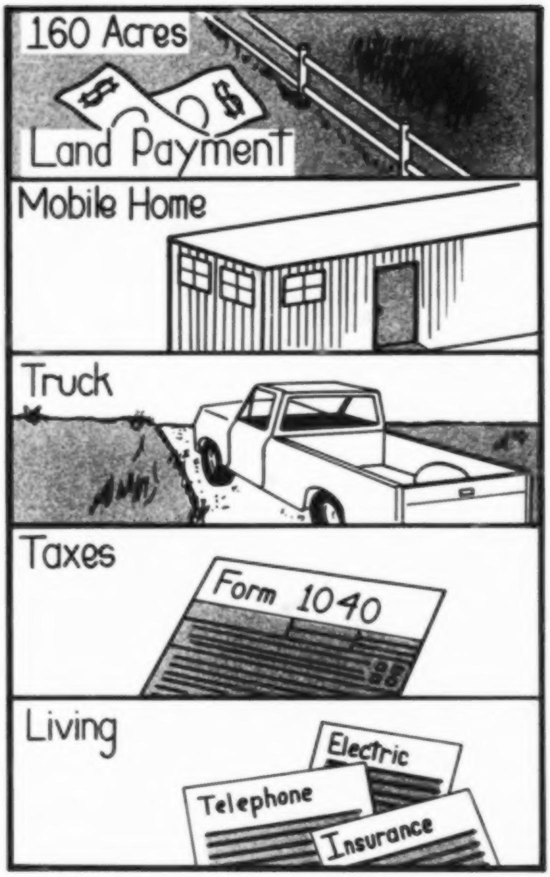


Fig. 11 — Ted And Lisa's Expenses

CASH FLOW PROJECTIONS

The next step in developing a good groundwork that can be used to make decisions is the making of cash flow projections. Because of her background in accounting Lisa prepares the information needed for the cash flow projections. She begins by listing their major expenses. Their fiscal year budget goes from August 1 to July 31. Their expenses are (Fig. 11):

- Land payment for 160 acres

  $10,131.20 annual payment (includes $200.00 for liability insurance, $9,465.90 interest, and $465.30 principal payment). Due in August.

- Mobile home payment

  $202.35 per month. (Includes credit life insurance)

- Truck payment

  $234.81 per month (in six months this will be paid off).

- Real estate and personal property taxes

  $500 annual payment. Due in December.

- Monthly living expenses for Ted and Lisa

  $700 per month. This includes mobile home, truck and medical insurance premiums.

- Ted and Lisa estimate their beginning cash balance on August 1 to be $12,200.00 They have a goal to maintain approximately $500.00 in their account at the beginning of each month to pay the first of the month bills.

  Lisa prepares three cash flow projections to cover the three alternatives that they want to consider (Fig. 12).

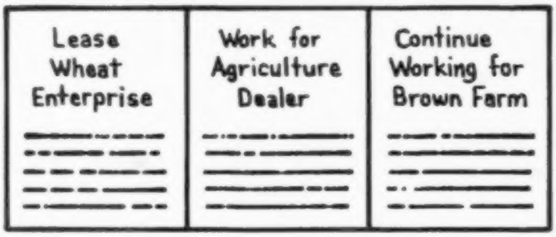


Fig. 12 — Ted And Lisa Prepare Three Cash Flow Proposals.

- Lease wheat enterprise (Alternative A).
- Work for implement dealer (Alternative B).
- Continue working for Brown Farm (Alternative C).

CASH FLOW PROJECTION

☐Business
☐Consolidated

Alternative A-- Lease Wheat Enterprise

PERIOD	AUG	SEP	OCT	NOV	DEC	JAN	FEB
OPERATING RECEIPTS							
1. Livestock Sales: a.							
2. b.							
3. Sales of Livestock Purchased for Resale							
4. Crop Sales: a. Wheat (Own)							
5. b. Wheat (Lease)							
6. Government Payments							
7. Other Farm Income Rent Income							
8.							
9. Total Cash Operating Receipts	—	—	—	—	—	—	—
CAPITAL SALES							
10. Breeding Livestock							
11. Machinery, Equipment							
12. Buildings, Land							
OTHER INFLOWS							
13. Wages and Salaries							
14. Investments							
15.							
16. Total Cash Inflow (9 + 10 thru 15)	—	—	—	—	—	—	—
OPERATING EXPENSES							
17. Hired Labor	400	570	500				
18. Repairs: Machinery and Equipment							
19. Buildings and Fences			150				
20. Feed			572	570	30	30	30
21. Seeds, Plants		6988					
22. Fertilizer, Lime, Chemicals		20646					13910
23. Machine Hire							
24. Supplies							
25. Vet. Medicine, Breeding Fees			325	325			
26. Fuel, Oil, Lubricants			4000		3500		
27. Storage, Warehousing							
28. Taxes (Real Estate and Personal Property)					500		
29. Insurance (Property, Liability, Crop)							
30. Utilities							
31. Rents, Leases							
32. Freight, Trucking			375				
33. Miscellaneous	172	263	262	173	172	173	172
34.							
35. Livestock Purchased for Resale		29000					
36. Total Cash Operating Expenses	572	57467	6184	1068	4202	203	14112
CAPITAL EXPENSES							
37. Breeding Livestock							
38. Machinery, Equipment							
39. Buildings, Fences, Land							
OTHER OUTFLOWS							
40. Family Living	900	700	700	700	700	700	700
41. Income Tax and Self Employment							
42. Investments Mobile Home & Truck	437	437	437	437	437	437	202
43.							
Scheduled Debt Payments							
44. Intermediate: interest							
45. principal							
46. Long Term: interest	9466						
47. principal	465						
48. Total Cash Outflows (36 + 37 thru 47)	11840	58604	7321	2205	5339	1340	15014
CASH FLOW SUMMARY							
49. Beginning Cash Balance	12200	360	500	500	500	500	500
50. Inflows - Outflows (16 - 48)	⟨11840⟩	⟨58604⟩	⟨7321⟩	⟨2205⟩	⟨5339⟩	⟨1340⟩	⟨15014⟩
51. Cash Position (49 + 50)	360	⟨58244⟩	⟨6821⟩	⟨1705⟩	⟨4839⟩	⟨840⟩	⟨14514⟩
52. New Borrowing: Operating		58744	7321	2205	5339	1340	15014
53. New Borrowing: Intermediate and Long Term							
54. Interest Payments on Operating Loan							
55. Principal Payments on Operating Loan							
56. Ending Cash Balance	360	500	500	500	500	500	500
DEBT OUTSTANDING							
57. Operating Prin. Int.	-0-	58744	66065	68270	73609	74949	89963
58. Intermediate Prin.							
59. Long Term Prin.							

Cooperative Extension Service • Division of Agriculture • Oklahoma State University

☐Projected for 19__

Name: Ted and Lisa Brown

Date completed ________

MAR	APR	MAY	JUN	JUL			TOTALS
						1.	
						2.	
39465						3.	39465
				18360		4.	18360
				104788		5.	104788
						6.	
4500						7.	4500
						8.	
43965	—	—	—	123148		9.	167113
						10.	
						11.	
						12.	
						13.	
						14.	
						15.	
43965	—	—	—	123148		16.	167113
600			200	500		17.	2770
						18.	
						19.	150
						20.	1232
						21.	6988
	3250					22.	37806
			27040	13000		23.	40040
						24.	
						25.	650
4000				4344		26.	15844
						27.	
						28.	500
						29.	
22						30.	22
						31.	
625						32.	1000
218	173	172	218	172		33.	2340
						34.	
						35.	29000
5465	3423	172	27458	18016		36.	138342
						37.	
						38.	
						39.	
700	700	700	700	700		40.	8600
						41.	
202	202	202	202	202		42.	3834
						43.	
						44.	
						45.	
						46.	9466
						47.	465
6367	4325	1074	28360	18918		48.	160707
500	500	500	500	500		49.	12200
37598	<4325>	<1074>	<28360>	104230		50.	6406
38098	<3825>	<574>	<28860>	104730		51.	18606
	4325	1074	28360			52.	123722
						53.	
4458				3385		54.	7843
33140				90582		55.	123722
500	500	500	500	10763		56.	10763
56823	61148	62222	90582	-0-		57.	
						58.	
						59.	

Supplement to FS-751 0783

☐Business
☐Consolidated

CASH FLOW PROJECTION

Alternative B -- Work for Implement Dealer

PERIOD		AUG	SEP	OCT	NOV	DEC	JAN
OPERATING RECEIPTS							
1. Livestock Sales: a.							
2. b.							
3. Sales of Livestock Purchased for Resale							
4. Crop Sales: a. Wheat							
5. b.							
6. Government Payments							
7. Other Farm Income Rent income							
8.							
9. Total Cash Operating Receipts		—	—	—	—	—	—
CAPITAL SALES							
10. Breeding Livestock							
11. Machinery, Equipment							
12. Buildings, Land							
OTHER INFLOWS							
13. Wages and Salaries		1440	1440	1440	1440	1440	1440
14. Investments							
15.							
16. Total Cash Inflow (9 + 10 thru 15)		1440	1440	1440	1440	1440	1440
OPERATING EXPENSES							
17. Hired Labor			70	100			
18. Repairs: Machinery and Equipment							
19. Buildings and Fences							
20. Feed							
21. Seeds, Plants			807				
22. Fertilizer, Lime, Chemicals			2430				
23. Machine Hire							
24. Supplies							
25. Vet. Medicine, Breeding Fees							
26. Fuel, Oil, Lubricants				900			
27. Storage, Warehousing							
28. Taxes (Real Estate and Personal Property)						500	
29. Insurance (Property, Liability, Crop)							
30. Utilities							
31. Rents, Leases							
32. Freight, Trucking							
33. Miscellaneous			90	90			
34.							
35. Livestock Purchased for Resale							
36. Total Cash Operating Expenses		-0-	3397	1090	-0-	500	-0-
CAPITAL EXPENSES							
37. Breeding Livestock							
38. Machinery, Equipment							
39. Buildings, Fences, Land							
OTHER OUTFLOWS							
40. Family Living		900	700	700	700	700	700
41. Income Tax and Self Employment							
42. Investments Mobile Home and Truck		437	437	437	437	437	437
43.							
Scheduled Debt Payments							
44. Intermediate: interest							
45. principal							
46. Long Term: interest		9466					
47. principal		465					
48. Total Cash Outflows (36 + 37 thru 47)		11268	4534	2227	1137	1637	1137
CASH FLOW SUMMARY							
49. Beginning Cash Balance		12200	2372	500	500	500	303
50. Inflows - Outflows (16 - 48)		<9828>	<3094>	<787>	303	<197>	303
51. Cash Position (49 + 50)		2372	<722>	<287>	803	303	606
52. New Borrowing: Operating			1222	787			
53. New Borrowing: Intermediate and Long Term							
54. Interest Payments on Operating Loan					40		44
55. Principal Payments on Operating Loan					263		62
56. Ending Cash Balance			500	500	500	303	500
DEBT OUTSTANDING							
57. Operating Prin. Int.		-0-	1222	2009	1746	1746	1684
58. Intermediate Prin.							
59. Long Term Prin.							

Cooperative Extension Service • Division of Agriculture • Oklahoma State University

☐Projected for 19

Name: Ted and Lisa Brown

Date completed

FEB	MAR	APR	MAY	JUN	JULY		TOTALS
						1.	
						2.	
						3.	
					18360	4.	18360
						5.	
						6.	
	900					7.	900
						8.	
—	900	—	—	—	18360	9.	19260
						10.	
						11.	
						12.	
1440	1440	1440	1440	1440	1440	13.	17280
						14.	
						15.	
1440	2340	1440	1440	1440	19800	16.	36540
	100				50	17.	320
						18.	
						19.	
						20.	
						21.	807
1605		375				22.	4410
				3120	1500	23.	4620
						24.	
						25.	
					947	26.	1847
						27.	
						28.	500
						29.	
						30.	
						31.	
						32.	
	45			45		33.	270
						34.	
						35.	
1605	145	375	-0-	3165	2497	36.	18774
						37.	
						38.	
						39.	
700	700	700	700	700	700	40.	8600
						41.	
202	202	202	202	202	202	42.	3834
						43.	
						44.	
						45.	
						46.	9466
						47.	465
2507	1047	1277	902	4067	3399	48.	35139
500	500	500	500	500	500	49.	12200
<1067>	1293	163	538	<2627>	16401	50.	1401
<567>	1793	663	1038	<2127>	16901	51.	13601
1067				2627		52.	5703
						53.	
	55	19	17		54	54.	229
	1238	144	521		3475	55.	5703
600	500	500	500	500	13372	56.	13372
2751	1513	1369	848	3475	-0-	57.	
						58.	
						59.	

Supplement to FS-751 0783

☐Business
☐Consolidated

CASH FLOW PROJECTION

Alternative C -- Continue to work at Brown Farm

PERIOD		AUG	SEP	OCT	NOV	DEC	JAN
OPERATING RECEIPTS							
1. Livestock Sales: a.							
2. b.							
3. Sales of Livestock Purchased for Resale							
4. Crop Sales: a.							
5. b.							
6. Government Payments							
7. Other Farm Income							
8.							
9. Total Cash Operating Receipts		—	—	—	—	—	—
CAPITAL SALES							
10. Breeding Livestock							
11. Machinery, Equipment							
12. Buildings, Land							
OTHER INFLOWS							
13. Wages and Salaries		1200	1200	1200	1200	1200	800
14. Investments							
15.							
16. Total Cash Inflow (9 + 10 thru 15)		1200	1200	1200	1200	1200	800
OPERATING EXPENSES							
17. Hired Labor			70	100			
18. Repairs: Machinery and Equipment							
19. Buildings and Fences				150			
20. Feed				572	570	30	30
21. Seeds, Plants			801				
22. Fertilizer, Lime, Chemicals			2430				
23. Machine Hire							
24. Supplies							
25. Vet. Medicine, Breeding Fees				325	325		
26. Fuel, Oil, Lubricants				950			300
27. Storage, Warehousing							
28. Taxes (Real Estate and Personal Property)						500	
29. Insurance (Property, Liability, Crop)							
30. Utilities							
31. Rents, Leases							
32. Freight, Trucking				375			
33. Miscellaneous			90	90			
34.							
35. Livestock Purchased for Resale			29000				
36. Total Cash Operating Expenses		-0-	32391	2562	895	530	330
CAPITAL EXPENSES							
37. Breeding Livestock							
38. Machinery, Equipment							
39. Buildings, Fences, Land							
OTHER OUTFLOWS							
40. Family Living		900	700	700	700	700	700
41. Income Tax and Self Employment							
42. Investments Mobile Home & Truck		437	437	437	437	437	437
43.							
Scheduled Debt Payments							
44. Intermediate: interest							
45. principal							
46. Long Term: interest		9466					
47. principal		465					
48. Total Cash Outflows (36 + 37 thru 47)		11268	33528	3699	2032	1667	1467
CASH FLOW SUMMARY							
49. Beginning Cash Balance		12200	2132	500	500	500	500
50. Inflows - Outflows (16 - 48)		<10068>	<32328>	<2499>	<832>	<467>	<667>
51. Cash Position (49 + 50)		2132	<30196>	<1999>	<332>	33	<167>
52. New Borrowing: Operating			30696	2499	832	467	667
53. New Borrowing: Intermediate and Long Term							
54. Interest Payments on Operating Loan							
55. Principal Payments on Operating Loan							
56. Ending Cash Balance		2132	500	500	500	500	500
DEBT OUTSTANDING							
57. Operating Prin. Int.		-0-	30696	33195	34027	34494	35161
58. Intermediate Prin.							
59. Long Term Prin.							

Cooperative Extension Service • Division of Agriculture • Oklahoma State University

☐Projected for 19___

Name: Ted and Lisa Brown

Date completed ________

FEB	MAR	APR	MAY	JUN	JUL		TOTALS
						1.	
						2.	
	39465					3.	39465
					18360	4.	18360
						5.	
						6.	
						7.	
						8.	
—	39465	—	—	—	18360	9.	57825
						10.	
						11.	
						12.	
800	800	1200	1200	1200	1200	13.	13200
						14.	
						15.	
800	40265	1200	1200	1200	19560	16.	71025
	100				50	17.	320
						18.	
						19.	
30						20.	1232
						21.	
1605		375				22.	4410
				3120		23.	3120
						24.	
						25.	650
					947	26.	2197
						27.	
						28.	500
						29.	
	22					30.	22
						31.	
	625					32.	1000
	45			45		33.	270
						34.	
						35.	29000
1635	792	375	-0-	3165	997	36.	43672
						37.	
						38.	
						39.	
700	700	700	700	700	700	40.	8600
						41.	
202	202	202	202	202	202	42.	3834
						43.	
						44.	
						45.	
						46.	9466
						47.	465
2537	1694	1277	902	4067	1899	48.	66037
500	500	500	423	500	500	49.	12200
<1737>	38571	<77>	298	<2867>	17661	50.	4988
<1237>	39071	423	721	<2367>	18161	51.	17188
1737				2867		52.	39765
						53.	
	2556		22		53	54.	2631
	36015		199		3551	55.	39765
500	500	423	500	500	14557	56.	14557
36898	183	883	684	3551	-0-	57.	
						58.	
						59.	

Supplement to FS-751 0783

FORM 6.3 DATE: NET WORTH STATEMENT: FARM AND NON-FARM ASSETS 19____

LINE	NON-FARM ASSETS	BOOK VALUE			CURRENT VALUE		
		BEGINNING	ENDING	NETCHANGE (2-1)	BEGINNING	ENDING	NETCHANGE (5-4)
1	Family Bank Balance	$	$	$	$	$	$
2	Savings						
3	Stocks and Bonds (present value)						
4	Accounts and Notes Receivable						
5	Life Insurance (cash value)						
6	TOTAL NON-FARM CURRENT ASSETS (add 1 thru 5)						
7	Auto and other Vehicles (family share)				5,500.00		
8	Household and Other						
9	Boat, Camper, Etc. Mobile Home				16,500.00		
10	Non-Farm Real Estate						
11	TOTAL NON-FARM ASSETS (add 6 thru 10)				22,000.00		
	FARM ASSETS						
12	Cash in Farm Account	$	$	$	$ 12,200.00	$	$
13	Farm Accounts Receivable (forms 4.1 + 4.2)						
14	Swine, non-breeding (form 3.6 line 10)						
15	Beef, non-breeding (form 3.6 line 21)						
16	Dairy, non-breeding (form 3.6 line 33)						
17	Other, non-breeding (form 3.6 line 37)						
18	Purchased Feeds (form 3.7 line 5)						
19	Stored Crops (form 3.7 line 16)						
20	Growing Crops (form 3.7 line 19)						
21	Supplies (form 3.7 line 35)						
22	Other Current Assets (form 3.7 line 38)						
23	TOTAL FARM CURRENT ASSETS (add 12 thru 22)				12,200.00		
24	Swine, breeding (form 3.6 line 5)						
25	Beef, breeding (form 3.6 line 16)						
26	Dairy, breeding (form 3.6 line 28)						
27	Other, breeding (form 3.6 line 35)						
28	Farm Accounts Receivable (forms 4.1 + 4.2)						
29	Machinery and Equipment (form 3.2)				6,200.00		
30	TOTAL FARM INTERMEDIATE ASSETS (add 24 thru 29)				6,200		
31	Buildings (form 3.5)				4,200.00		
32	Land (form 3.5)				88,000.00		
33	TOTAL FARM LONG TERM ASSETS (add 31 + 32)				92,200.00		
34	TOTAL FARM ASSETS (add 23 + 30 + 33)				110,600.00		
35	TOTAL ASSETS (add 11 + 34)				132,600.00		
	FINANCIAL RATIOS						
A	CURRENT RATIO (FARM) Current Assets (form 6.3 line 23) ÷ Current Liabilities (form 6.4 line 58)				1.23:1		
B	WORKING ASSET RATIO (FARM) Current + Intermediate Assets (form 6.3 lines 23 + 30) ÷ Current + Intermediate Liabilities (form 6.4 lines 58 + 62)				1.85:1		
C	NET CAPITAL RATIO (FARM) Total Farm Assets (form 6.3 line 34) ÷ Total Farm Liabilities (form 6.4 line 67)				1.25:1		
COLUMN		1	2	3	4	5	6

NET WORTH STATEMENTS

After reviewing the cash flow projections for each alternative, Ted and Lisa know that they need additional funds. They prepare a net worth statement that shows their financial position as of August 1.

FORM 6.4 DATE: **NET WORTH STATEMENT: FARM AND NON-FARM LIABILITIES 19**

LINE	NON-FARM LIABILITIES	BOOK VALUE			CURRENT VALUE		
		BEGINNING	ENDING	NET CHANGE (8-7)	BEGINNING	ENDING	NET CHANGE (11-10)
36	Charge Accounts	$	$	$	$	$	$
37	Notes, portion due next year				1,408.86		
38	Mortgages, due next year						
39	Accrued Interest on non-farm liabilities						
40	TOTAL NON-FARM CURRENT LIABILITIES (add 36-39)				1,408.86		
41	Notes, portion due after next year				15,000.00		
42							
43	Mortgages, portion due after next year						
44							
45	TOTAL NON-FARM LIABILITIES (add 40 thru 44)						
46	NON-FARM NET WORTH (line 11 minus line 45)				16,408.86		
	FARM LIABILITIES						
47	Short Term Farm Notes Payable (form 4.4)	$	$	$	$	$	$
48							
49							
50	Accounts Payable (form 4.3)						
51							
52							
53	Credit Lines and Short Term Multipayt Notes (form 4.5)						
54	Intermed. & Long Term Notes Due Next Year (form 4.6)				465.30		
55							
56	Accrued Liabilities (taxes, rent, etc.) (form 4.3)						
57	Accrued Interest (form 4.3 thru 4.6)				9,465.90		
58	TOTAL FARM CURRENT LIABILITIES (add 47 thru 57)				9,931.20		
59	Intermed. Term Debt Due After Next Year (form 4.6)						
60							
61							
62	TOTAL FARM INTERMEDIATE LIABILITIES (add 59-61)				-0-		
63	Long Term Debt Due After Next Year (form 4.6)				78417.10		
64							
65							
66	TOTAL FARM LONG TERM LIABILITIES (add 63-65)				78,417.10		
67	TOTAL FARM LIABILITIES (add 58 + 62 + 66)				88,348.30		
68	TOTAL FARM NET WORTH (line 34 minus 67)				22,251.70		
69	TOTAL LIABILITIES (add 45 + 67)				104,757.16		
70	TOTAL NET WORTH (line 35 minus 69)				27,842.84		
	FINANCIAL RATIOS						
D	NET CAPITAL RATIO (FARM & NON-FARM) = Total Assets (form 6.3 line 35) / Total Liabilities (form 6.4 line 69)				1.27:1		
E	DEBT EQUITY RATIO = Total Liabilities (form 6.4 line 69) / Net Worth (form 6.4 line 70)				3.76:1		
F	PERCENT EQUITY = Net Worth (form 6.4 line 70) / Total Assets (form 6.3 line 35) X 100	%	%		21 %	%	
COLUMN		7	8	9	10	11	12

VISITING A LENDER

After reviewing the cash flow projections for each alternative, Ted and Lisa realize that they must borrow money to implement any of their alternatives. They ask themselves:

- Do we have all the necessary information to present to a lender for a loan application?
- What should we look for when we consider an ag lender?
- How are we going to handle questions about our low percent equity and high debt-equity ratios?

Ted and Lisa take their records to three lending institutions. They know that they must find a lender that they can work with for many years to come. They also know that some lenders will be more willing to work with them than others. All of the lenders that they visited wanted to know the same basic questions (Fig. 13):

- Will the loan be repaid in the coming year?
- What are Ted and Lisa's short and long term goals?
- What if they are too optimistic or pessimistic about their enterprises?

Ted and Lisa agree that their enterprises in the recessed economy have more risk than usual. They noted that their loan would be repaid as soon as possible. However they did not have a means of raising immediate capital to cover loses if they occurred.

When will it be repaid?
Long term needs? Short term?
What if enterprises fail?
Loan Dept.

Fig. 13 — Lenders Ask Similar Questions.

CASH FLOW STATEMENT A

All of the lenders are reluctant to make a loan on the 1150 acre wheat enterprise. The risks are too high. The immediate cash outflows will decrease Ted and Lisa's cash position immediately.

Even a slight decrease in expected market values in wheat might mean financial trouble for them. Only a co-sign and guarantee by Bill and Ann could secure a loan on the 1150 acre wheat enterprise. The lenders all agreed in separate meetings that Ted should start his farming operation on a much smaller scale.

CASH FLOW STATEMENT B

The second alternative (B) to consider is for Ted to work as a mechanic at the local implement dealership and farm his wheat ground.

This statement showed more promise than statement A. It was also put behind statement C in preference. First of all, it does supply Ted and Lisa with a steady monthly income. It does not allow them the potential of Cash Flow Statement C. Ted and Lisa do not like this alternative as much as C because they will not gain the experience of managing stocker steers and the continued experiences of working closely with Brown Farm.

CASH FLOW STATEMENT C

This is the alternative that Ted and Lisa like best. It shows the most potential in terms of their cash flow position, and repayment ability. It also allows Ted and Lisa to gain experience managing stocker steers and a wheat operation (Fig. 14) and allows Ted to continue working at Brown Farm.

Fig. 14 — Cash Flow C Was Agreeable To Everyone. It Let Lisa And Ted Become Involved With Steer And Wheat Enterprises.

The lender that they feel they can work with happens to be the lender that has backed Bill and Ann throughout the years. The lender agrees to submit their request to the loan committee. It will be an interest rate that can be renegotiated every 6 months. Ted and Lisa decided to pursue this loan. They know that they now must take the **risk** and accept the **consequences** of their decision (Fig. 15).

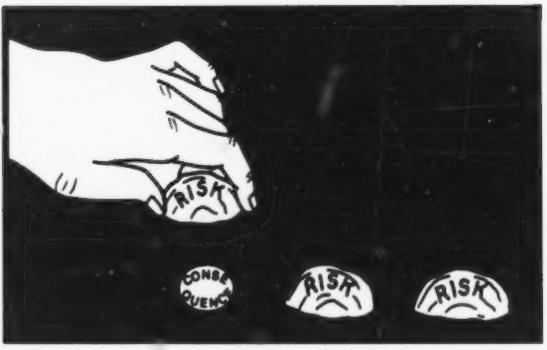


Fig. 15 — Ted And Lisa Take The Risk And Accept The Consequences.

COMPLETING THEIR DECISION

Ted and Lisa complete a loan application that gives them the credit line necessary to accomplish their goals as outlined in Cash Flow Projection C. The lender tells them that they can obtain short term loans from the institution and that the institution will help them set up long term financing in order to help them "get started" in their farming operation.

As part of the loan agreement, Ted and Lisa agree to keep accurate records for their enterprises. They will use the cash method of accounting which they are comfortable with. Every quarter they agree to sit down with their lender and review their actual cash flow results with their projection. Adjustments can be made at that time.

The lender also suggests that Ted and Lisa obtain more training in the areas of farm and ranch record keeping, management, marketing, uses of fertilizer, chemicals and machinery (Fig. 16).

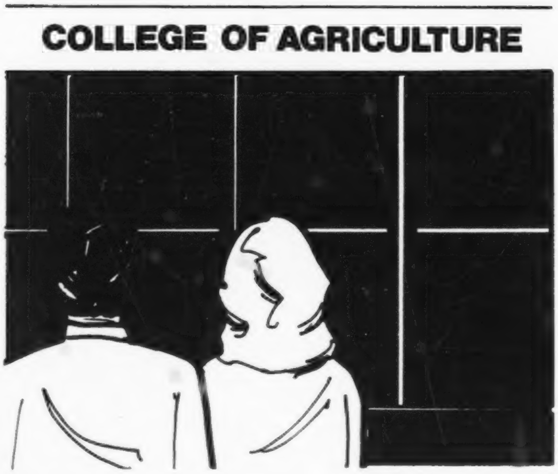


Fig. 16 — Ted And Lisa Decide To Continue Their Education

MARKETING STRATEGY

Because Ted and Lisa must meet the cash inflow requirements of their cash flow projection, their marketing strategies may be held to a minimum. Their quantities of commodities may not be sufficient to meet hedging contracts in the futures market. They might consider forward contracting if such contracts become available. It will be important for them to reduce marketing risk if alternatives become available (Fig. 17).

They spend many hours looking at their alternatives. They know that a business with few assets like theirs must develop sound and aggressive market strategy.

Fig. 17 — Ted And Lisa's Marketing Strategy Is Limited.

INCOME TAX

In October Ted and Lisa plan to sit down and thoroughly review their income tax situation. They know that they must keep their income tax records up-to-date throughout the year to maximize after-tax income.

Since Bill owns the machinery that they use, they do not have items to depreciate. Income tax records at this time are limited to operating expenses, interest from their loans, the returns associated with their wheat and steer enterprises and wages that are earned at Brown Farm.

PARTIAL BUDGET — MARCH

It is now early March for Ted and Lisa. Last October Ted purchased 100 stocker steers for his wheat pasture at $2.00 per cwt. less than he expected.

Cattle prices have improved. Wheat prices and yields are expected to remain the same. Ted and Lisa have learned how to use a partial budget form in a farm business management class (Fig. 18).

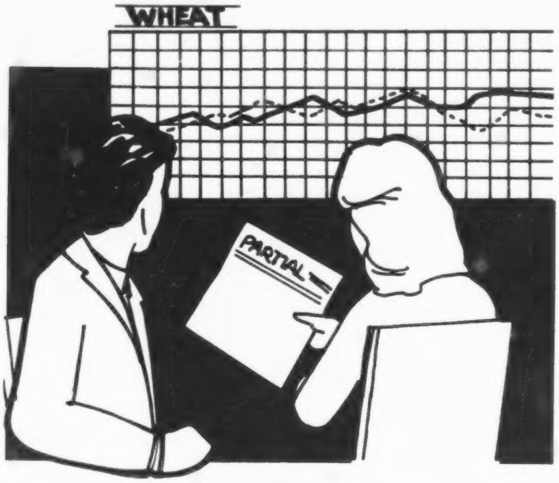


Fig. 18 — Ted And Lisa Use The Partial Budget To Make Minor Changes In The Farming Operation.

They can use this know-how to decide if it is profitable to purchase 100 more steers and graze-out their wheat or continue their plans of selling the 100 steers that they now have and harvesting their wheat.

The information that Ted and Lisa have gathered to make the decision include:

Additional costs:

- Purchase of 100 — 700 lb. steers @ $66.00 per cwt.
- Trucking for the 100 head @ $3.75 per head
- Salt and minerals for 200 head for 2 1/2 months @ $.60 per head
- Sales commission for 100 head @ $6.25 per head (new steers purchased)
- Vet medicine for 200 head @ $1.00 per head
- Utilities for 200 head @ $.10 per head
- Fuel and variable expenses to manage 200 head at $1.00 per head
- Interest:

  $47,740 for new expenses @ 16% interest for 2.5 months

  $34,354 for old steers @ 15% interest for 2.5 months

  Total interest for the 2.5 months = $2565

Reduced Returns:

- Expected yield of 36 bushels per acre
- Expected price is $3.40 per bushel
- Expect to harvest 150 acres

Additional Returns

- 100 — 850 lb. steers @ $64.00 per cwt.
- Gain on 100 steers (2 lbs. per head/day = 75 days @ 2 lbs. = 150 lbs.)

Reduced Costs:

- Custom combining for 150 acres @ $16.00 per acre
- Custom hauling for 150 acres @ $4.80 per acre
- Using the information gathered Ted and Lisa complete the following partial budget:

SITUATION: Buy 100 additional stocker steers and grazeout wheat

ADDITIONAL COSTS:

100-700 lb. steers at 66.00/cwt	=	$46,200
Salt and minerals at .60/hd × 200	=	120
Trucking at 3.75 × 100	=	375
Sales Commission at 6.25 × 100	=	625
Vet Medicine at 1.00/hd × 200	=	200
Utilities at .10/hd × 200	=	20
Fuel, etc. at 1.00/hd × 200	=	200
Interest	=	2565
		50,305

ADDITIONAL RETURNS:

100-850 lb. steers at 64.00/cwt	=	$54,400
100-gain on 100 steers on hand 150 lbs. ea. at 64.00/cwt.	=	9,600
		$64,000

REDUCED RETURNS:

Wheat		
36 bu./ac. at $3.40/bu.	=	$122.40
122.40/ac. × 150 ac.	=	18,360.00

REDUCED COSTS:

Custom Combining		
150 ac. at $16.00/ac.	=	$2,400
Custom Hauling		
150 ac. at 4.80/ac.	=	$ 720
		$3,120

A. TOTAL ANNUAL ADDITIONAL COSTS AND REDUCED RETURNS

$ 68,665

B. TOTAL ANNUAL ADDITIONAL RETURNS AND REDUCED COSTS:

$ 67,120

$ 68,665

NET CHANGE IN INCOME (B – A) $ <1,545>

The negative returns in column A are greater than the positive returns in column B, therefore Lisa and Ted will not purchase the additional 100 steers. They will sell the steers that they have on hand and harvest their wheat based on the information that they have available at this time.

If the expected price of steers in May had been $65.80/cwt or greater (breakeven analysis) Ted and Lisa may have purchased the additional steers.

During the coming years Ted and Lisa and the Brown Farm family members will have many opportunities to use the farm business management principles and tools described in this book (Fig. 19).

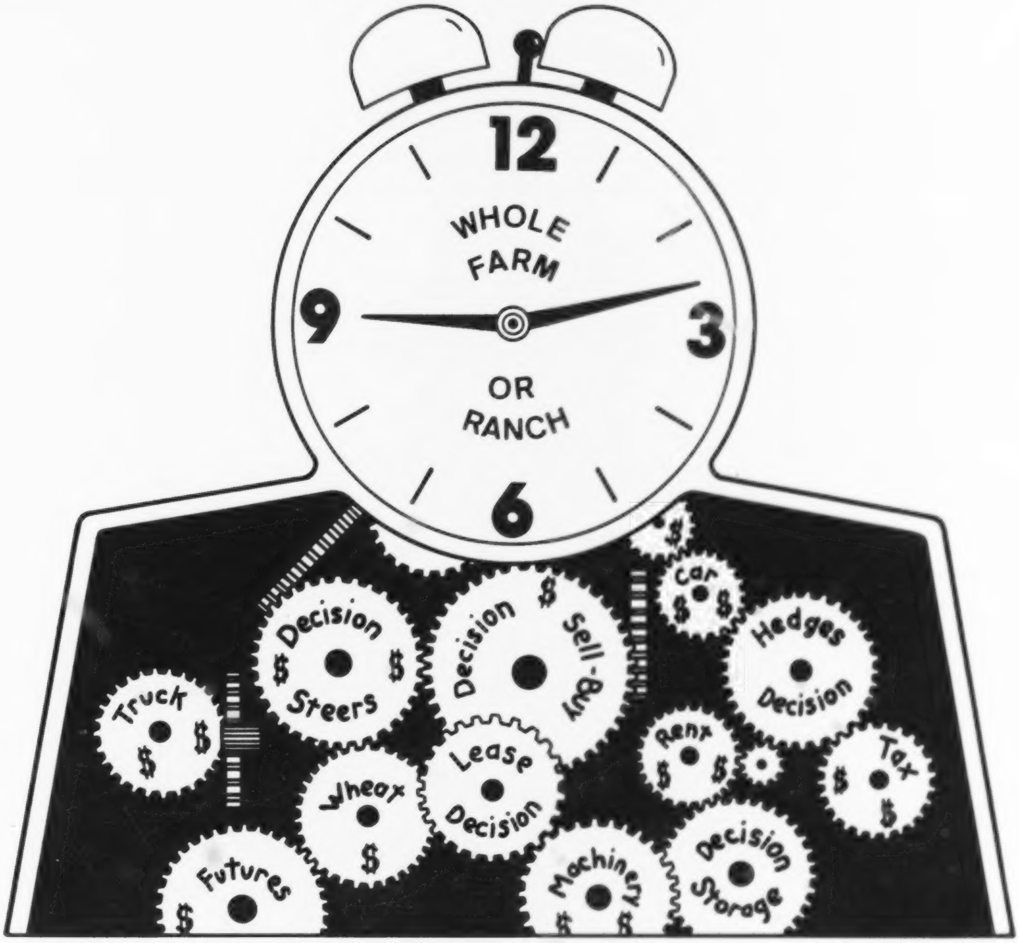


Fig. 19 — You Must Be Able To Make Decisions That Let Your Enterprises Work Together As A WHOLE FARM OR RANCH.

GLOSSARY

A

Accounts Payable
Money owed by a business after a certain time.

Accounts Receivable
Money owed to a business at the end of a specific time.

Accrual Method
A method used to report income and expenses by keeping track of inventory levels.

ACRS (Regular)
Accelerated Cost Recovery System. A method of determining depreciation of personal property by using the *IRS Farmer's tax Guide.* and multiplying the percent of depreciation by the total cost of the item. Replaces earlier depreciation techniques.

ACRS (Straight Line)
Also called the optional method of the Accelerated Cost Recovery System. A method used to determine the depreciation of personal or real property that is found by dividing the original cost of an item by the recovery period. First year cost is determined by the month that the item is purchased. The recovery terms are found in the *IRS Farmer's Tax Guide.* Replaces earlier depreciation techniques.

Agent
An agent transacts the business and represents the employer in business affairs.

Annuities
Investments or contracts that are yearly dividends.

Assets
The property or resources owned and controlled by a business.

Attractive Nuisance
An object that is a danger to those that are attracted to it. Usually a term for artificial objects that may potentially attract someone through curiosity and then injure them.

Average Yield
Units of output of crop divided by the number of the units of input.

B

Balance Sheet
A summary of the financial situation for a business for a specific point in time. Assets minus liabilities equal net worth. Also called a Net Worth Statement. A snapshot of the asset and liability position of a business for one point in time.

Benefit/Cost Ratio
An investment analysis that divides the present value of all benefits of an investment by the present value of all costs. A present worth technique.

Book Value
A tax or cost base for assets and liabilities determined after adjustments and prior depreciation are taken.

Breach of Contract
Failure to comply with the terms and agreements of a contract.

Budget
A formal written or unwritten plan that projects the use of assets for a future time. A schedule of expected returns and costs. Enterprise budgets show expected returns and costs associated with a specific production activity. Whole Farm budgets show the expected returns and costs for all enterprises of a business.

C

Call
A purchaser sets the price with a commodity or stock broker to buy stock when it decreases to a certain price.

Capital
The amount of money that can be obtained through borrowing or the selling of assets that is used to promote the production of other goods.

Capital Gains
The gain or loss from the sale of capital assets.

Cash Accounting Method
All taxable income, whether received in cash or property, is included as income in the year that it is received. Income is received when it is credited to an account or unconditionally set apart so that it may be drawn upon at any time.

Cash Expenditures
Money payed out by a business to purchase items, assets, or pay interest due.

Cash Flow Projection
An estimate of monthly cash inflows and outflows over a period of time. Usually it covers one year.

Cash Flow Summary
A list or record of actual monthly cash levels for a business. Usually it covers one year.

Cash Method
A method used to report income and expenses in one year for income tax purposes.

Call Receipts
Money coming into a business from sales of assets, resales, or interest received.

Commodity
Goods that can be bought or sold.

Common Law
A body of unwritten law that has developed from social custom, precedence, and opinions handed down from our legal system.

Comparative Analysis
The measure of one result with the results of past outputs of the same time period.

Compounding
The interest received from an investment. Interest is added to the principal and interest is paid again on the total sum. It is a method of calculation that can be used to determine the value of the amount of money that you have at a future time.

Contracts
An informal or formal written document that is a binding agreement between two or more people or businesses.

Cooperative
A nonprofit business organization that is owned and controlled by the members for the mutual benefit of the members.

Corporation
A business organization that is run by a board of trustees at the discretion of the controlling stockholders. It has a separate legal identity and is taxed apart from its shareholders.

CPU
The Central Processing Unit is the point in the computer where input data is manipulated into information and sent to output devices.

Credit Records
A list of accounts receivable and payable including mortgages, energy bills, notes owed, and financing.

Credits
An entry on the right-hand side of an account constituting an addition to revenue, net worth or liability account.

CRT
The Cathode Ray Tube is the television like device that projects a computer output onto a screen for review.

Current Ratio
A financial analysis that measures liquidity by showing whether current assets are greater than current liabilities.

Current Value
Cash value of assets based on actual cost or market value less sale expenses.

D

Debt Equity Ratio
A measure of solvency. It is used to measure the decline or increase of value for a business by comparing past ratios. It is the relationship between owned and borrowed capital. Example: Equity = $300,000; Liabilities = $200,000; DER = .66. This measurement is not significant without past records of DER.

Debits
An entry on the left-hand side of an account constituting an addition to an expense or asset account or a deduction from a revenue, net worth, or liability account.

Deed
A document that shows the exact size, location, ownership and method of ownership of property.

Demand
The amount of a product that buyers want to purchase. Along with supply it determines the market cost of an item.

Depreciation
A method of prorating the cost of a working asset over its useful life. Depreciation may be defined as that decrease in value that occurs regardless of repair and maintenance.

Diminishing Returns
A measurable point where an increase in the addition of a variable cost item decreases the actual output of an enterprise.

Discounting
The calculation that tells the current value of an amount of money that will not be received until the future.

Double Entry
An accounting system that keeps track of assets versus liabilities. Every credit is balanced by a debit transaction.

E

Elasticity
The percentage of change in a variable to a percent change in another variable. Examples: The percentage change in the quantity of goods that are purchased in response to a one percent change in price. The price elasticity of the supply of the goods refers to the percentage change in the quantity in response to a one percent change in price.

Enterprise
A specific process or activity that requires a certain amount of risk in order to make a profit.

Enterprise Budget
A projected look at the costs and risks involved with producing one commodity or making one product.

Equity
The financial measure of the net worth or value of a business or person based on total assets minus total liabilities.

Estate
The total value of a person's property, both real and personal.

Executor/Executrix
A person appointed in a will or by the court system to carry out requests and dispose of all property in accordance with the deceased.

Expense
Both fixed and variable costs associated with producing the product determine expense.

Expressed
A formally written agreement with all terms of the agreement in writing and signed by all parties.

F

Feasibility
The process of weighing the monetary advantages versus the disadvantages of an investment.

Fixed Assets
This includes long-term assets such as land, buildings and real estate improvements that are not looked at as an immediate or constant source of income.

Fixed Cost
The money spent to do business. No matter what enterprise is undertaken, fixed costs must be paid. It does not vary with the level of production in the short run. Examples: taxes, insurance, and interest rates on investments.

Float
The amount of time that a check or other noncash payment for a product takes to clear the purchaser's account.

Forward Contract
A written agreement that specifies that a commodity or product will be delivered at a future time for a specific price.

Free Market
A market where there is a true interaction of supply and demand. Government interference such as controls and tariffs do not exist. Monopolies or other artificial barriers do not alter the supply or demand.

Futures Contract
An agreement to buy and receive or to sell and deliver a commodity at a future date with certain specified characteristics.

H

Hedging
The buying and selling of commodity futures to protect a grower or producer from extreme price fluctuations in the marketplace at the time the product is sold. Hedging insures against loss but also prevents windfall gains.

I

Income
The amount of money received from selling a product or doing a job.

Income Averaging
A method of figuring income tax in which part of an unusually large amount of taxable income can be taxed in lower tax brackets and may result in a lower tax to be paid.

Income Statement
A financial record that shows a business earning or loss over a specific time. An income statement may also be known as a profit and loss statement or an operating statement.

Inelasticity
Price changes of a product cause changes in the supply and demand in the same direction. A price increase causes increased demand. A price decrease causes a decrease in demand. The same is true of supply. Higher demand causes higher supply; lower demand causes lower supply. The ratio is below 1. Example = A price of a commodity decreases 10%, sales decrease 8%, elasticity = .80% = inelasticity.

Inferred Contract
An informal agreement such as an oral agreement or a handshake.

Insurance
A method of reducing risk by paying a small regular payment (premium) instead of a possible large but uncertain one.

Internal Rate of Return
An investment "breakeven" analysis. It compares the present value of money to the present value of costs. This allows the investor to compare investments and determine if an investment is potentially profitable. A present worth technique.

Inventory
A physical count of all assets in a business. Usually done once every year for income tax purposes or continuously to monitor available assets.

Investment Tax Credit
An amount of money that can be deducted from taxes as a direct result of profit from an investment. This amounts to up to 10% of qualified investments.

Invitees
A person that has consent or has been asked to enter another persons property or land.

L

Law
The entire body of customs or practices of a society. Binding rules of conduct or action prescribed by or enforced by a controlling authority such as the courts.

Leases
Formal agreements that allow land or facilities to be rented for a specific time and a specific use.

Liabilities
The money or amount owed on a balance sheet.

Licensees
Someone who enters on land for their own pleasure, sport, or benefit. Licensees are tolerated rather than are invited onto another's land and property.

Liquidity
The ability of a business to pay off liabilities without disrupting business.

M

Margin
The amount of money deposited by buyers and sellers of futures contracts to insure performance to commitments. This serves as a performance bend rather than a "down payment."

Market
That area or space wherein the supply and demand forces can work. Wherever commodities are bought and sold by buyers and sellers.

Marketing
The coordination of activitis that are involved with the buying or selling of a product.

Marketing Management
A part of business management that involves the collection and interpretation of data and the use of this information in order to buy or sell a product.

Market Value
The value of assets minus the variable costs that is used for inventory purposes.

Monopolistic Competition
A marketplace where there are many small producers and sellers. Products are similar but do not share the same quality, size, or weight. Example: Apples come in yellow, red, large size, small size, Johnathon and golden delicious. The buyer of apples can be selective in monopolistic competition.

Monopoly
A market situation where one large company owns the complete manufacturing or producing process. It can control prices and supply at will. Monopolies are illegal in a free-market system.

N

Negligence
The neglect of responsibility. People are responsible for their assets. A failure to use ordinary care or discretion under a given circumstance.

Net Capital Ratio
A financial measure of solvency where the total assets are divided by the total liabilities. The quotient must be above 1 in order to be solvent. Examples: Assets = \$150,000; Liabilities = \$100,000. Net capital Ratio = 1.5.

Net Farm Income
Returns to unpaid operator and family labor, equity capital, and management.

Net Worth Statement
It shows the financial condition of a business at a definite point in time. It lists all assets, values of assets, and liabilities. Also known as a balance sheet, financial statement, or statement of financial condition.

O

Oligopoly
A marketplace situation with a few manufacturers of similar products. Product quality differs and the manufacturers attempt to make the differences seem greater than they actually are. Example: automobile manufacturers.

Opportunity Cost
The best possible return on an asset if it is used in the best alternative way.

Option
A formal contract that gives the right to buy or sell a commodity during a certain time period and at a preset price.

Output (Commodities)
A unit of production resulting from the combination of variable and fixed inputs.

Overhead Enterprises
The income and expense left at the end of a budget period that is shared by many enterprises. Example: Fuel cost for running a pickup for one year.

P

Partial Budget
A projected look at the effects that minor changes and adjustments might have on Whole Farm or Enterprise budgets.

Partnership
A business organization that is controlled by more than one person. Two or more people are associated for the purpose of conducting a business for profit.

Payback Technique
An analysis technique that determines how long before the returns are equal to the initial investment.

Perfect Competition
A marketplace where there are many businesses producing the same product. No single buyer or seller can influence the price structure. No producer is so large as to control or perceptively affect market supply or demand. Sometimes called pure competition.

Personal Computer
A microelectric programmable machine that can process, store, and retrieve data. It is designed to serve the business and communication needs of the home and small business by processing data into usable information.

Personal Property
Property that is not permanently in place but is temporary or movable. In general, all property that is not real property.

Present Value
The monetary value of a give sum of money for a future time period and what it is actually worth today.

Present Worth Technique
An investment analysis that adjusts money flows for time.

Principle
A fundamental truth (law of demand, law of supply).

Probate
The procedure or process of establishing the validity of a will and administering or settling an estate.

Profit
The excess of returns over expenditures (accounting concept). The excess after payments have been made to all factors of production (economic concept).

Projected Analysis
A financial estimate of what a business or enterprise will be able to do in the future. Often it is an estimated cash flow that shows expected returns versus expected debt.

Put
An option that allows the seller to sell a futures contract or stock share when the price raises to a certain level. A put does not obligate, only gives the right of the owner of stock to sell.

Q

Quit Claim Deed
A written statement that the seller of property gives to the buyer that gives up only the seller's right to the property. The property may have other claims from outside parties.

R

Ratio
The result of measuring one item against another. It is the quotient found by dividing one result by another.

Real Property
Land and all immovable fixtures erected, growing, or affixed to the land.

Records, Financial
A list of money owed versus the money received for a business.

Records, Physical
A list such as an inventory that shows the physical assets of a business.

Resources
All of the inputs used in the production process.

Return
The money available after production expenses are subtracted from total income.

Right
A power, privilege, claim or demand that is given to someone by law.

Riparian
A owner of a side of a stream or river bank.

Risk Management
The statistical calculation of how successful an enterprise may be.

S

S Corporation
A business organization that is structured as a corporation that qualifies for all purposes except taxation.

Salvage Value
The value of an asset after it has been fully depreciated.

Simple Interest
The product of the principal multiplied by time in years, and the annual interest rate. Interest is found by using the original principal for the entire period.

Single Entry
An accounting system that lists receipts and expenses and is not concerned about maintaining a current balance between the two.

Software
A program or set of programs that tells the computer how to process data. It is usually contained on cassettes, disks, or cartridges.

Sole Proprietorship
A business that is controlled by one manager. A sole proprietor owns, makes all of the decisions, and does all of the planning for a business. This is the simplest form of business organization.

Solvent
A financial measure of assets. Total assets must be larger than total liabilities.

Statute of Frauds
The law that requires certain agreements to be written before they are considered a legal contract.

Strays (Estrays)
Domestic animals not including dogs and cats that have broken away from their confinement and are running loose.

Supply
The amount or quantity of goods or services that are offered for sale by a supplier or group of suppliers in a given market at a given series of prices. It is usually assumed that as price increases, producers will supply more goods (law of supply).

T

Time Value of Money
The amount that money increases or decreases through time depending on the many alternative uses.

Trespasser
A person who is neither invited nor tolerated on someone's land or property.

V

Variable Costs
The money spent to grow or produce one enterprise. If the enterprise isn't undertaken the money will not be spent.

W

Warranty Deed
A written statement that the seller of property gives to the buyer that says the land is free from legal claims by outside parties.

Whole Budgeting
A plan comparing the alternative physical or financial courses of action for a business.

Workman's Compensation Insurance
A government insurance program that reimburses an employer the money that is paid to an employee for injury that occurs on the job.

Whole Farm Analysis
A collection of data that helps to identify factors affecting profitability and efficiency of the farm business.

A SELECTED BIBLIOGRAPHY

The following list of books can be used as references and background reading material. It is by no means a **complete** list. See your local librarian for assistance in finding books on the subject of farm and ranch business management.

Albracht, James. *Farm Management Basic Care Curriculum.* Pittsburg, Kansas; Pittsburg State University/ Vocational Curriculum Materials Center.

All About On-Farm Computing. Milwaukee, Wisconsin. AgriData Resources, Inc. 1983.

Danielson, L. E. et al. *In-Service Training In Economics — Instructors' Manual.* Raleigh, North Carolina, Economics Special Report No. 43, Agricultural Extension Service; North Carolina State University. 1976.

Department of the Treasury. *Your Federal Income Tax For Individuals.* Washington, D.C.; Department of the Treasury, Internal Revenue Service. (Use the latest issue available).

Doane. *Doane's Agricultural Reference* St. Louis, Missouri; Doane Agricultural Service, Inc. 1984.

Doane. *Doane's Farm Management Guide,* Fourteenth Edition. St. Louis, Missouri; Doane Agricultural Service, Inc. 1980.

Doll, John P.; James V. Rhodes; and Jerry G. West. *Economics of Agricultural Production, Markets, and Policy.* Homewood, Illinois; Richard D. Irwin, Inc. 1968.

Ensminger, M.E. *The Stockman's Handbook.* Danville, Illinois; The Interstate Printers and Publishers, Inc. 1978.

Fishco, Daniel T. and Joanne Dembinski, Consultants. *Budgeting: Follett Copying Skills Series.* Chicago, Illinois; Follett Publishing Company. 1977.

Forster, D. Lynn, and Bernard L. Erven. *Foundations For Managing The Farm Business.* Columbus, Ohio; Grid Publishing, Inc. 1981.

Hardin, Mike L. and Joseph E. Williams. *Oklahoma Young Farmer Record Book.* Stillwater, Oklahoma; Oklahoma State Department of Vocational and Technical Education/Curriculum and Instructional Materials Center. 1981.

Ikerd, John E. *Basic Market Concepts.* Raleigh, North Carolina; Economics Special Report No. 25, Department of Economics; North Carolina State University. 1974.

James, Sydney C. and Everett Stoneberg. *Farm Accounting and Business Analysis.* Ames, Iowa; Iowa State University Press. 1974.

Jobes, Raleigh. *Oklahoma Enterprise Budget Book.* Stillwater, Oklahoma; Oklahoma State University Cooperative Extension Service/Farm Management Extension. 1984.

Jobes, Raleigh. *Use of Budgets In Farm Management.* Stillwater, Oklahoma; Oklahoma State University Cooperative Extension, Facts No. 139. 1976.

Keast, James D. et. al. *Do It Right The First Time.* St. Louis, Missouri; Doane Agricultural Service, Inc. 1978.

Legacy, James; Tom Stitt, and Fred Reneau. *Microcomputing In Agriculture* Reston, Virginia; Reston Publishing Company. 1984.

Maynard, Cecil D. and Glenn E. Laughlin. *Types of Farm Business Organizations.* Stillwater, Oklahoma; Oklahoma State University Extension Fact Sheet No. 122. 1974.

National FFA Contests Bulletin No. 4 1985, 1986, 1987. Alexandria, Virginia; National FFA Center. 1985.

O'Byrne, John C. and Charles Davenport. *Tax Guide For Farmers.* Indianapolis, Indiana; The Allen Smith Company. 1981.

Osburn, Donald D. and Kenneth C. Schneeberger. *Modern Agricultural Management.* Reston, Virginia; Reston Publishing Company, Inc. 1978.

Oster, Merrill J. *Develop Your Own Marketing Plan.* Cedar Falls, Iowa; Professional Farmers of America. 1983.

Oster, Merrill J. *Professional Hedging Handbook.* Cedar Falls, Iowa; Professional Farmers of America. 1982.

Penson, John B.; Danny A. Klinefelter; and David A. Lins. *Farm Investment and Financial Analysis.* Englewood Cliffs, New Jersey; Prentice Hall, Inc. 1982.

Purcell, Wayne D. *Agricultural Marketing, Systems, Coordination, Cash and Futures Prices.* Reston, Virginia; Reston Publishing Company. 1979.

Penson, John B.; Danny A. Klinefelter; and David A. Lins. *Farm Investment and Financial Analysis.* Englewood Cliffs, New Jersey; Prentice Hall, Inc. 1982.

Purcell, Wayne D. *Agricultural Marketing, Systems, Coordination, Cash and Futures Prices.* Reston, Virginia; Reston Publishing Company. 1979.

Richardson, Vic. Notes from a presentation on "Farmers Rights" taken at the 1983 National Farm Business Management Conference in Scottsbluff, Nebraska. Vic Richardson is a Business Management Instructor at Owatonna, Minnesota. His presentation was used by the authors in preparing certain chapters of this book.

Schneeberger, Kenneth C. and Donald D. Osburn. *Financial Planning In Agriculture.* Danville, Illinois; The Interstate Printers and Publishers, Inc. 1978.

Shepherd, Geoffrey S.; Gene A. Futrell; and Robert J. Strain. *Marketing Farm Products* Ames, Iowa; Iowa State University Press. 1977.

Silk, Leonard. *Economics In Plain English.* New York; Simon & Schuster, Inc. 1978.

Sonka, Steven T. *Computers In Farming.* New York; McGraw-Hill Book Company. 1983.

Steward, Jim. *Farm Business Management, rev. ed.* Stillwater, Oklahoma; Oklahoma State Department of Vocational and Technical Education/Curriculum and Instructional Materials Center. Volume I through III. 1984.

Thomas, Kenneth H. and Michael D. Boehlje. *Farm Business Arrangements: Which One For You?* Ames, Iowa. North Central Regional Extension Publication 50; Iowa State University. 1982.

U.S. Printing Office. *Farmer's Tax Guide; Publication 225.* Washington, D.C.; Department of the Treasury/Internal Revenue Service. (Use the latest issue available.)

U.S. Printing Office. *USDA Booklet: Computers on the Farm.* Washington, D.C.: Government Printing Office, Dept. 36-GA, Superintendent of Documents. 001-000-04413-3. (Use the latest issue available.)

Wheeler, Jon D. *Tax Desk Book For Farming And Ranching.* Englewood Cliffs, New Jersey, Institute for Business Planning, Inc. 1978.

INDEX

A

Accounting 2-6, 2-8
Accounts payable 2-12
Accounts receivable 2-12
Accrual method 2-7
ACRS 9-9
Adjusted tax base 2-16
Agents 11-16, 11-18
Analysis
  Budget 4-1 — 4-20
  Cash flow 6-1 — 6-10
  Comparative 3-12
  Cost 5-1 — 5-12
  Financial 3-5
  Internal rate of return 8-11
  Investment 8-1 — 8-22
  Ratio 3-12
  Payback 8-8
  Projected 3-16
Annuities 8-6
Assets 3-2, 3-17
Attractive Nuisance 11-16

B

Benefit/Cost ratio 8-10
Book value 2-13, 2-16
Breach of contract 11-5
Budgets 4-1 — 4-20
  Enterprise 4-5 — 4-15
  Partial 4-6 — 4-19
  Whole farm 2-2, 4-15
Business organizations 10-1 — 10-14

C

Call 7-26
Capital 8-1
Capital assets 2-12
Capital gains 9-6
Capital sales 2-21
Cash flow analysis 6-1 — 6-10
Cash flow projections 2-2, 13-15, 13-24
Cash flow statements 13-24
Cash flow summary 2-1, 2-32
Cash method 2-7
Cash rent 2-20
Commodity options 7-26
Comparative analysis 3-12
Compounding 8-2, 8-4, 8-7
Computers 12-1 — 12-12
Contract 11-3 — 11-7
Contractors, independent 11-18
Cooperatives 10-11 — 10-14
Corporations, farm 10-7 — 10-11
Cost analysis 5-1 — 5-12
Costs
  Fixed 4-9, 5-6
  Variable 4-9
Credit records 2-32
Crops, storing 11-7
Current value, market value 2-16

D

- Decision-making process 1-3
- Deeds 11-26
- Depreciable balance 2-16
- Depreciation 8-8 — 8-11
- Diminishing returns 5-3
- Discount adjustment 8-16
- Discounting 8-3, 8-5, 8-7
- Drainage 11-24

E

- Efficiency 1-2
- Elasticity, price 7-13
- Employees 2-34, 11-17
- Enterprise budget 2-35, 4-5 — 4-15, 13-11
- Enterprise records 2-35
- Equi-marginal principal 5-8
- Equity 3-8
- Estate planning 11-25
- Estate taxes 9-20 — 9-22, 11-29
- Expenditures 2-17, 3-9
- Expenses, business 2-24
- Expenses, nonbusiness 2-29

F

- Farm production costs 2-15
- Fences 11-19
- Financial analysis 3-5
- Financial records 2-3
- Fix price 7-22
- Fixed costs 4-9, 5-6
- Float 11-6
- Forward contract 11-7
- Forward price 7-23
- Functions of marketing 7-4
- Futures 7-25

G

- Goals
  - Intermediate 1-6
  - Long term 1-6
  - Short term 1-6
- Goal setting process 1-6

H

- Hedging 7-23 — 7-25

I

- Income, net farm 3-12
- Income reporting 2-7, 2-8
- Income statements 2-2, 3-9, 13-9
- Income tax 13-26
- Independent contractors 11-16, 11-18
- Index of profitability 8-1
- Input 5-1
- Insurance 11-11, 11-12, 11-17, 11-30
- Interest 8-2
- Internal rate of return 8-11
- Inventory 2-9
- Inventory count 2-13
- Inventory values 2-13, 2-14
- Investment analysis 8-1 — 8-22
- Investment tax credit 8-13, 9-12, 9-13
- Invitees 11-14
- Irrigation 11-24

L

Labor . . . . 9-17 — 9-19

Law, ag. . . . . 11-1 — 11-30

Law of demand 7-6

Law of descent 11-27

Law of supply 7-8

Leases . . . . 8-18, 11-8 — 11-11

Least cost ration formula 5-10

Liabilities
  Financial 3-3
  Legal . . . . 11-13 — 11-25

Limited partnership 10-7

Liquidity 3-7

Liscensee 11-15

Long run supply 7-11

M

Management 1-1

Marginal rate of substitution 5-11

Market cost 2-14

Market value, current 2-13, 2-15, 2-16

Marketing . . . . 7-1 — 7-30

Market structures . . . . 7-14 — 7-16

Monopolies 7-15

N

Negligence 11-8, 11-13

Net cash income 3-10

Net farm income 3-12

Net market price 2-14

Net worth 3-4

Net worth statement . . . 2-1, 3-2, 3-7, 3-17, 13-9, 13-22

Nonfarm income 2-22

O

Objectives 1-4

Oligopoly 7-16

Open account payable 2-32

Open account receivable 2-32

Operating margin 7-19

Opportunity cost 5-6

Options 7-26, 7-27

Output 5-1

P

Partial budgets . . . . 4-16 — 4-19, 13-26

Partnerships 10-4

Patronage dividends 2-19

Payback analysis technique 8-8

Perfect competition 7-15

Physical records 2-3

Pollution laws 11-22

Posting 2-16

Price 7-5

Price elasticity 7-13

Present worth technique 8-10

Production function 5-1

Profit 5-4

Profit maximizing rule 5-4

Projected analysis 3-16

Put 7-26

Q
Quit claim deed 11-26, 11-27

R
Ratio analysis 3-12
Receipts 2-17, 2-22, 3-9
Record keeping . . . . 2-1 — 2-36
Retirement 11-29
Riparian rights 11-23
Risk management 2-2
Risk of nonpayment 11-5

S
S Corporation 10-11
Seekers, price 7-12
Shifters, demand 7-6
Shifters, supply 7-9
Short run supply 7-11
Social security 9-17, 9-20
Sole proprietorship 10-2
Solvency 3-8
Statute of frauds 11-4
Statutory law 11-2
Strays 11-21
Supply and demand . . . . 7-6 — 7-13

T
Takers, price 7-12
Taxes . . . . 8-12, 9-1 — 9-22, 11-29, 13-26
Tax shields . . . . 8-18 — 8-22
Time value of money 8-2
Trespassers 11-15

V
Value, establishment of 7-2
Variable costs 4-9

W
Water, surface 11-24
Whole farm budgets 2-21, 4-15, 4-16
Wills 11-27, 11-28
Workmen's compensation insurance . . . 11-17